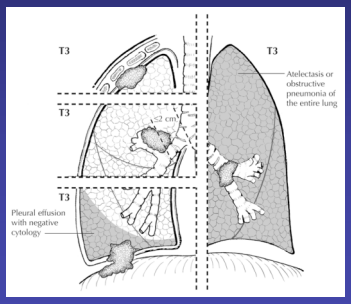
Advanced Abstracting Lung Cancer

III. EXTENT OF DISEASE

Staging Systems and Documentation



Source: AJCC Cancer Staging Illustrations from the AJCC Cancer Staging Atlas. Springer, 2007. Used with permission.

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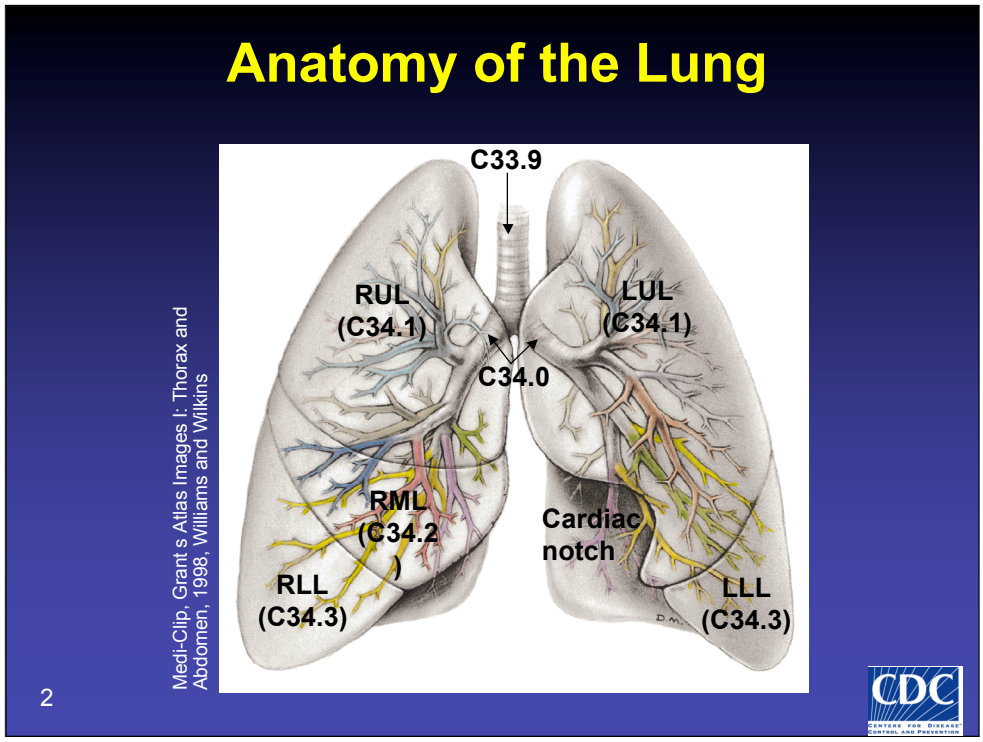
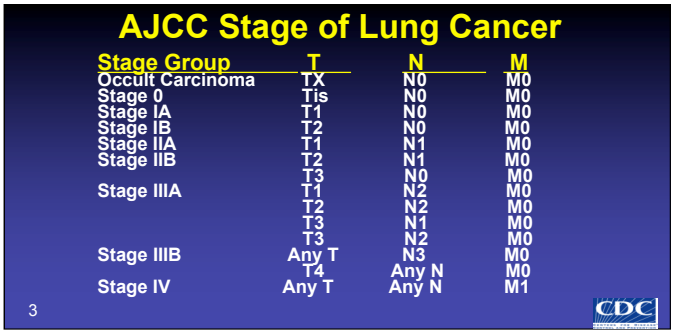
Now that we have determined the site, histology, behavior and grade of the cancer we are reporting, we must code the extent of disease. Lung cancers are coded based on the extent of the cancer and the size of the tumor. In this section of the presentation, we will review the extent of disease and how to apply Collaborative Stage and American Joint Committee on Cancer (AJCC) stage based on this extension.

Section III of this advanced abstracting module discusses staging rules, documentation, and other aspects of determining how far the cancer has spread from its point of origin.



The anatomy of the lung is illustrated in this diagram. The main stem bronchi extend off of the trachea (C34.0). The right and left main stem bronchus lead to the lobes of the lungs. The right side of the lung has three lobes: the right upper lobe (C34.1), the right middle lobe (C34.2), and the right lower lobe (C34.3). The left side of the lung has only two lobes: the left upper lobe (C34.1) and the left lower lobe (C34.3). The cardiac notch is where the heart tucks into the left lobe of the lung. There is no middle lobe on the left. The bronchial tree is seen in colors within both lungs. The trachea or windpipe (C33.9) is noted extending upward from the main stem bronchus.



This table shows the AJCC stage groups for lung cancer.

Occult carcinoma cannot be assessed, but is proven by the presence of malignant cells in sputum or bronchial washings although not visualized by imaging/bronchoscopy.

Stage 0 is in situ disease. This is very rare in lung cancer.

Stage I is localized involvement. There are no lymph nodes involved in stage I disease. Stage IA and IB are determined by the size of the primary tumor. Any tumor larger than 3 cm is automatically at least Stage IB, as is any tumor involving the visceral pleura (the covering of the lung parenchyma) or tumor in a main stem bronchus.

Positive peribronchial or intrapulmonary lymph nodes move the case from Stage I to at least Stage II.

Stage IIA disease denotes a small, localized tumor with ipsilateral hilar/intrapulmonary lymph node involvement.

Stage IIB is a more advanced primary, but still confined to lung or pleura with ipsilateral hilar/intrapulmonary lymph node involvement or contiguous tumor extension to immediately adjacent structures without lymph node involvement.

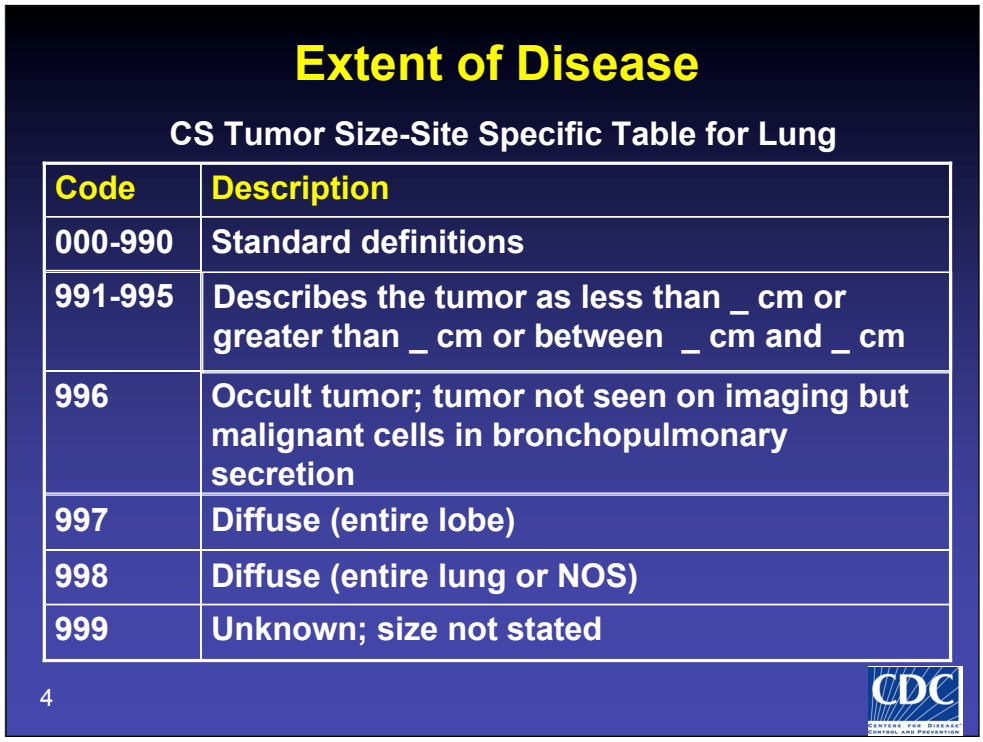
Ipsilateral mediastinal lymph node involvement moves the case into the Stage III range.

Stage IIIA disease represents ipsilateral mediastinal/subcarinal lymph node involvement or contiguous tumor extension to immediately adjacent structures with either hilar/intrapulmonary or ipsilateral mediastinal/subcarinal lymph node involvement. Stage IIIA is still considered potentially resectable.

Stage IIIB represents contralateral lymph node involvement or contiguous tumor extension to mediastinum, heart, great vessels, trachea, esophagus, vertebral body, carina, or separate tumor nodule in the same lobe; or tumor with malignant pleural effusion. In general, Stage IIIB disease is not resectable, and the patient will be offered other treatment.

Stage IV disease represents discontinuous tumor metastases, such as distant metastasis or separate tumor nodule(s) in a different lobe either ipsilateral or contralateral, or true hematogenous metastases to other visceral organs.

AJCC stage will be discussed in further detail, along with treatment in future slides.



CS tumor size site specific table is not the standard table. Codes 000-990 and 991-995 follow the standard table.

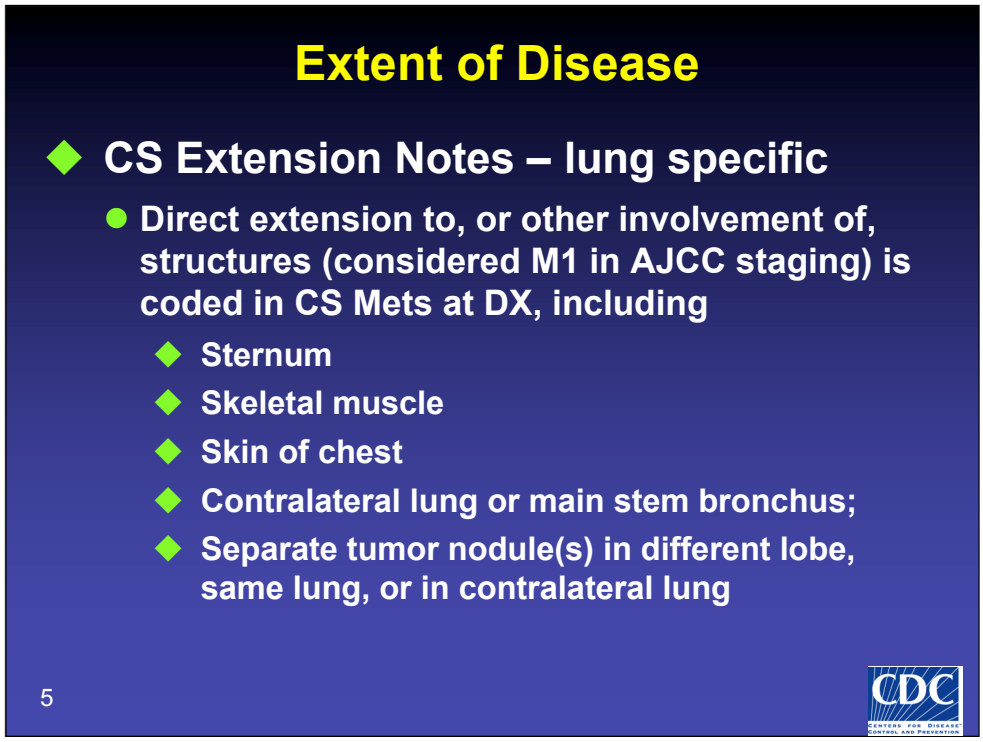
Avoid using the non-specific tumor size codes in 992 through 995 unless there is no precise size given. For example, if the CT scan says the tumor is 3.4 cm in greatest dimension, code Tumor Size as 034, rather than 994 (stated as less than 4 cm in size).

Code 996 describes an occult tumor; tumor not seen on imaging, but malignant cells were found in bronchopulmonary secretions. This would be a TX (occult carcinoma) in the TNM T category.

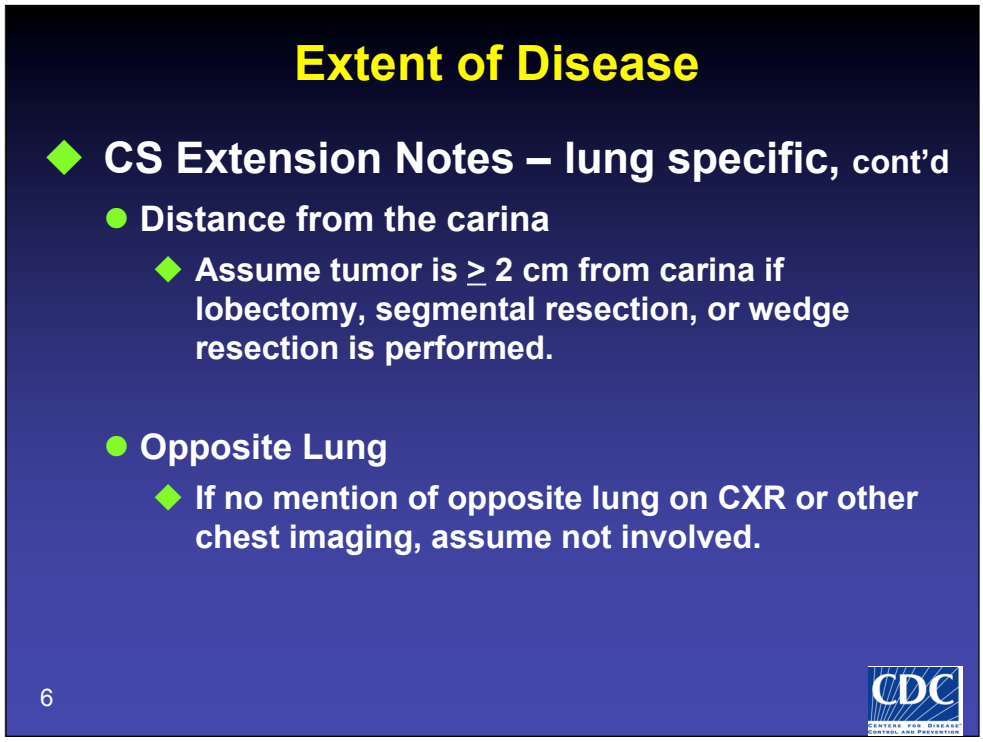
Code 997 describes diffuse tumor involvement of the entire lobe. This would be a T4 in the TNM T category because it involves only a single lobe.

Code 998 describes diffuse tumor involvement of the entire lung or NOS. This would be an M1 in the TNM classification because it involves more than one lobe of the lung.

Code 999 is unknown; size not stated or not documented in the medical record.

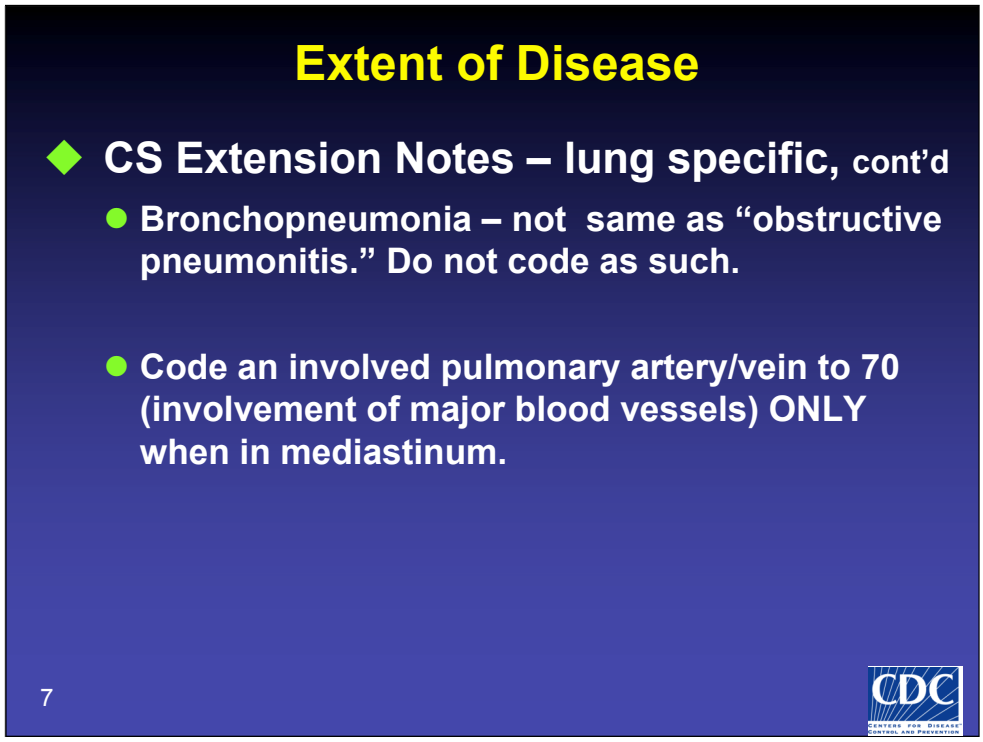


There are some site specific rules for CS extension for lung cancer. Code involved structures in the CS field where they are listed. Direct extension to other involvement of structures considered M1 in AJCC staging is coded in the data item CS Mets at DX. This includes sternum, skeletal muscle, skin of chest, contralateral lung or main stem bronchus, and separate tumor nodule(s) in different lobe, same lung, or in contralateral lung.



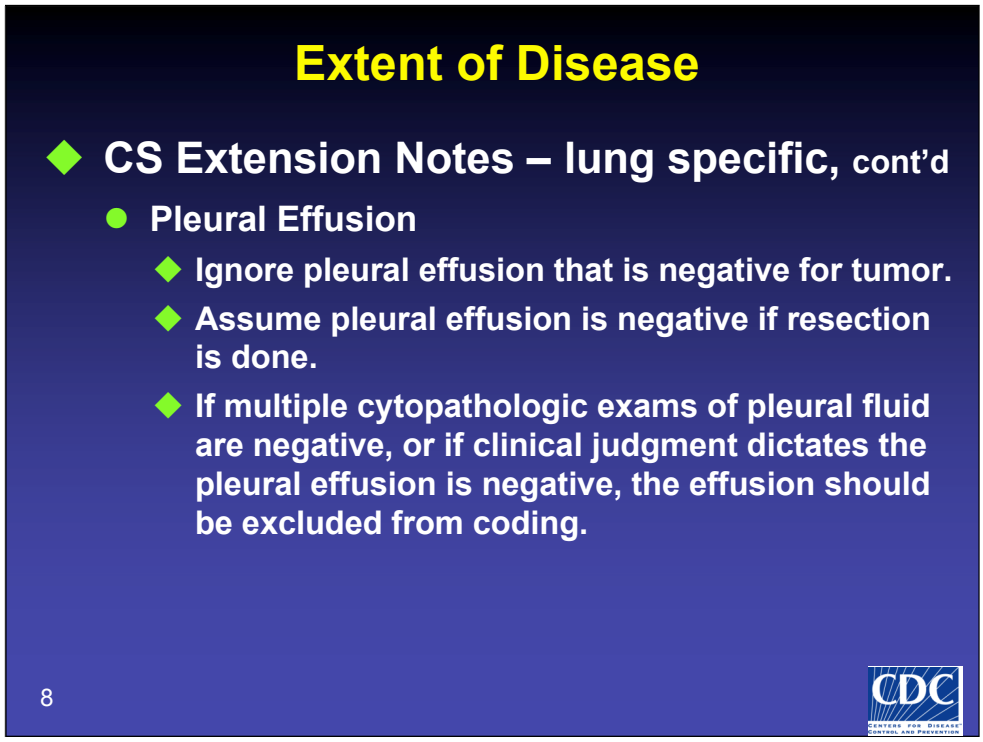
Distance from carina: Assume the tumor is greater than or equal to 2 cm from the carina if a lobectomy, segmental resection or wedge resection is performed.

Opposite Lung: If no mention is made of the opposite lung on imaging, then assume it is not involved.



Bronchopneumonia is not the same thing as "obstructive pneumonitis" and should not be coded as such. Obstructive pneumonitis is an irreversible inflammation of the lung because of blockage of the bronchi and the accumulation of fluid and mucous in the lung tissue.

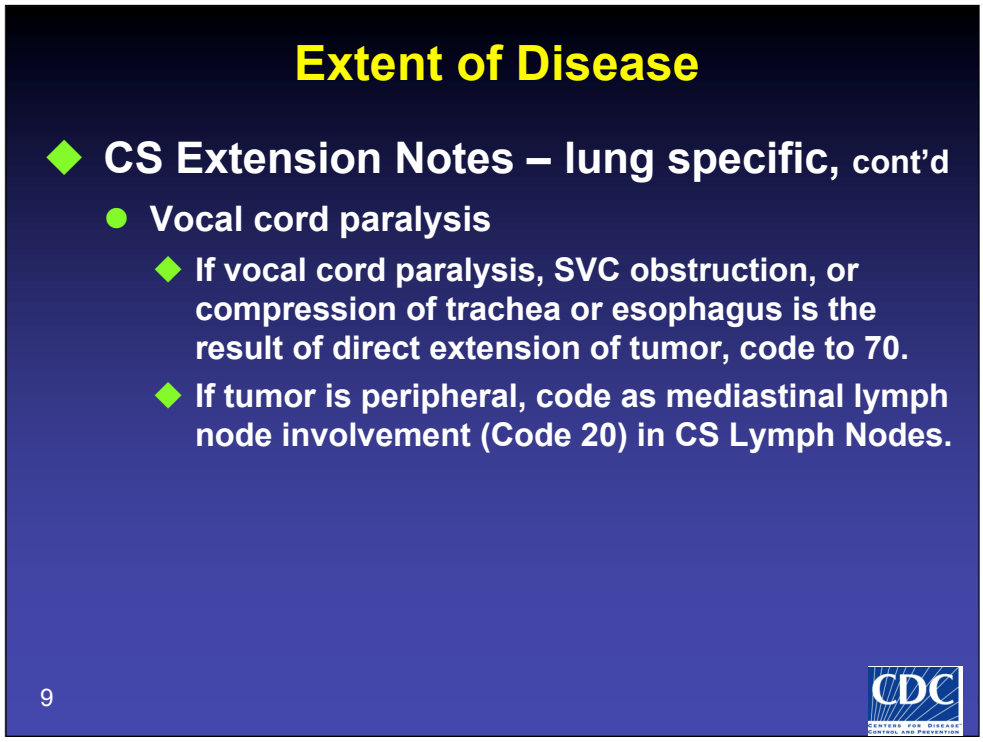
An involved pulmonary artery or vein in the mediastinum is coded to 70 (involvement of major blood vessels). However, if the involvement of the artery or vein appears to be only within the lung tissue and not in the mediastinum, it would **not** be coded to 70.



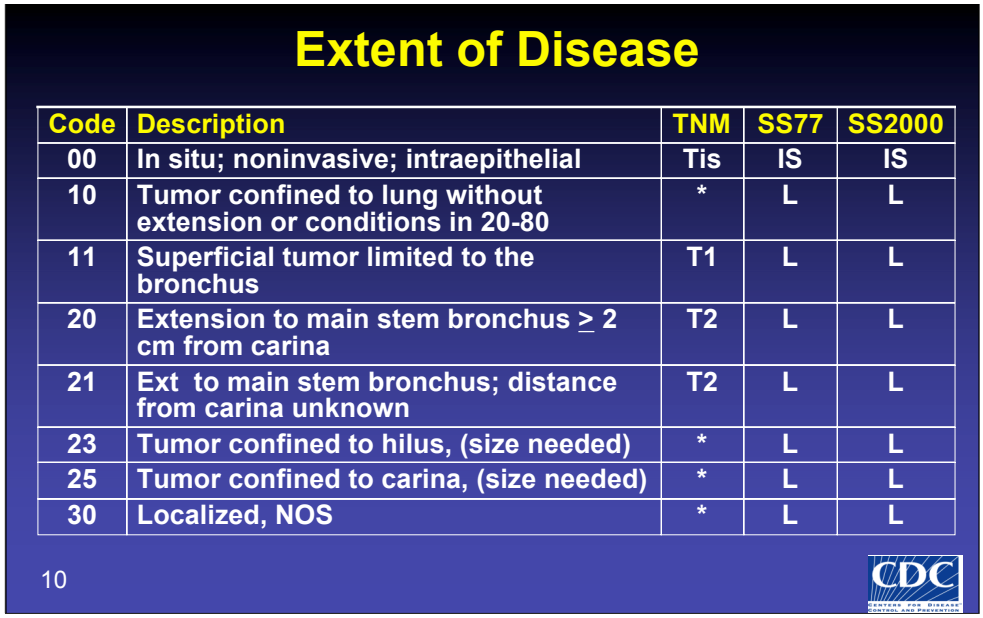
Pleural effusions have always been difficult to assess. These are some rules to assist you in abstracting pleural effusions:

- •Ignore pleural effusions that are negative for tumor.
- •Assume that a pleural effusion is negative if a resection is done.
- • Most pleural effusions associated with lung cancers are due to tumor. However, there are a few patients in whom multiple cytologies of pleural fluid are negative for tumor. In these cases, fluid is non bloody and is not an exudate.

When these elements and clinical judgment dictate that the effusion is not related to the tumor, the effusion should be excluded as a staging element and the patient should be staged according to other factors.



Vocal cord paralysis, superior vena cava obstruction, or compression of the trachea or the esophagus might be related to direct extension of the primary tumor or to lymph node involvement. The treatment options and prognosis associated with these manifestations of disease extent fall within the T4-Stage IIIB category; therefore, generally use Extension code 70 for these manifestations. HOWEVER, if the primary tumor is peripheral and clearly unrelated to vocal cord paralysis, vena cava obstruction, or compression of the trachea or the esophagus, code these manifestations as mediastinal lymph node involvement (Code 20) in CS lymph nodes unless there is a statement of involvement by direct extension from the primary tumor. This note is repeated under CS regional lymph nodes.



CS extension for lung cancer is as follows:

Code 00 – in situ; noninvasive; intraepithelial. This is a very rare finding in lung cancer. Code 00 maps to Tis and summary stage 2000 in situ.

Code 10 – Tumor confined to one lung, WITHOUT extension or conditions described in Codes 20-80 (excluding primary in main stem bronchus) It is important to read the medical record carefully, especially the imaging studies, to rule out involvement of the pleura or mediastinum. Code 10 excludes superficial tumors as described in code 11. TNM is derived based on size of tumor and summary stage 2000 is localized.

Code 11 – Superficial tumor of any size with invasive component limited to bronchial wall, with or without proximal extension to the main stem bronchus. This is also an uncommon tumor—one that starts in a bronchus and is completely limited to the bronchial wall (no parenchymal extension). It can be of any size and can even spread almost to the carina, yet still map to T1. Code 11 maps to summary stage 2000 localized disease.

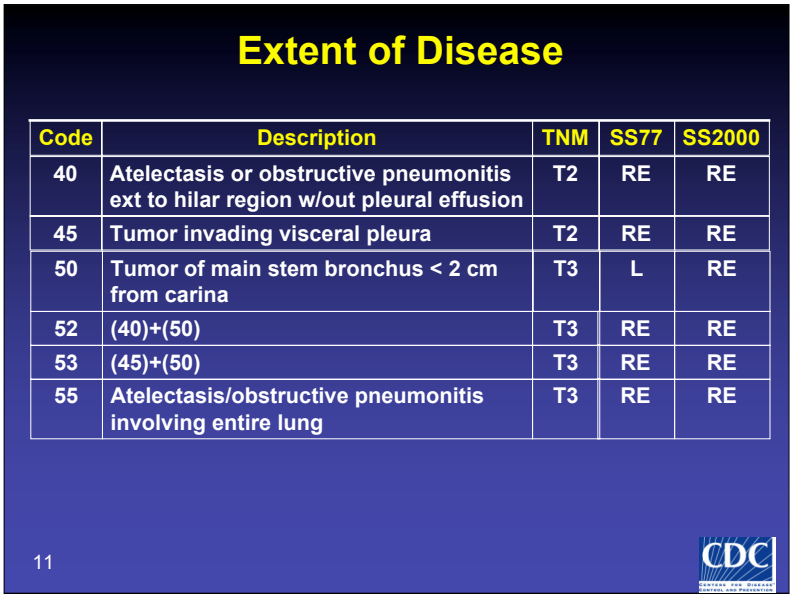
Code 20 – Extension from other parts of lung TO main stem bronchus, NOS; tumor involving the main stem bronchus greater than or equal to 2.0 cm from the carina (primary in lung or main stem bronchus). Again this excludes superficial tumors as described in Code 11. Two centimeters from the carina is essentially a surgical boundary line; a surgeon needs approximately a two centimeter "stub" of normal tissue in the main stem bronchus in order to close up the bronchus for a pneumonectomy. This code maps to T2 and summary stage 2000 localized.

Code 21 – Tumor involving main stem bronchus, NOS (distance from the carina is not stated and patient has no surgery). Note 2 explains that if the patient does have surgery, it can be assumed that the tumor is farther than 2 centimeters from the carina. Code 21 maps to T2 and summary stage 2000 localized.

Code 23 – Tumor that starts in the hilus, which is the space where the major blood vessels, nerves, and lymphatic channels enter the lung. The TNM system deals with lung cancers that start in the parenchyma and spread to the hilum, but doesn't really address the infrequent lung cancer that actually starts in the hilum. In most cases, a hilar mass turns out to be involved lymph nodes from a primary tumor elsewhere in the lung. Code 23 is intended for a tumor that initially develops within the hilum, not for something described as a hilar mass or perihilar mass. Size is needed to assign T category in AJCC and summary stage 2000 is localized.

Code 25 – Tumor confined to carina. These are another type of rare tumor that isn't addressed in the AJCC Cancer Staging Manual. But because the code was included in summary staging, it became a part of CS as well. Size is needed to assign T category in AJCC and summary stage 2000 for localized extension.

Code 30 – Localized, NOS. Use this code when there is no information about tumor size or location of tumor, but the tumor appears to be confined to one lobe. The primary difference between Code 10 and Code 30 is that Code 10 should be used when the extension criteria in Codes 11 through 25 have been investigated and ruled out. Code 30 should be used when those other extension codes have not been ruled out and all you know is that the tumor is confined to one lung. Size is needed to assign T category in AJCC and summary stage 2000 is, as stated, localized.



Atelectasis and obstructive pneumonitis are two clinical conditions that affect the staging of lung cancer. These terms appear in Codes 40 and 55 for CS Extension of lung cancer. Atelectasis is failure of the lung to expand or inflate completely because a lobar or segmental bronchus has been blocked by tumor. As the air is absorbed into the bloodstream, that part of the lung collapses and can't be reinflated. If the collapse involves a segment or lobe, use Code 40; if the entire lung has collapsed, use Code 55.

Obstructive pneumonitis is caused by a tumor in a bronchus blocking the normal flow of air, resulting in retention of lung secretions that build up and inhibit air exchange. As the secretions build up, the affected area appears completely opacified on imaging. If the obstructive pneumonitis involves a segment or a lobe, use Code 40; if the obstructive pneumonitis involves and entire lung, use Code 55.

Bronchopneumonia is a reversible condition that is different from both atelectasis and obstructive pneumonitis. If pneumonia or bronchopneumonia is described, this does not qualify for either Code 40 or 55 tumor extension.

CS extension for lung cancer continues as follows:

Code 40 – Atelectasis or obstructive pneumonitis that extends to the hilar region but does not involve the entire lung WITHOUT pleural effusion. Code 40 maps to T2 and summary stage 2000 regional disease.

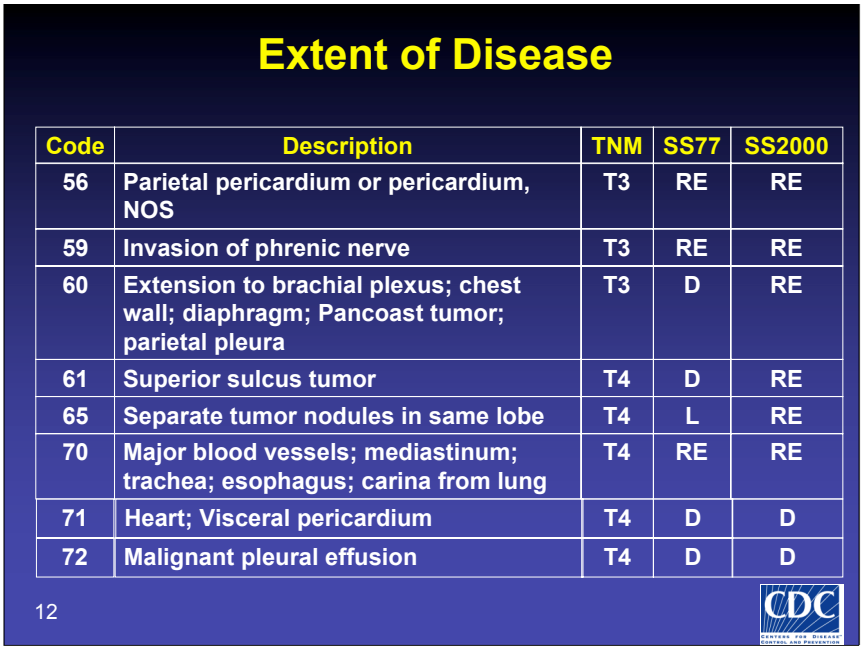
Code 45 – Extension to the pleura, visceral or NOS (WITHOUT pleural effusion) AND/OR pulmonary ligament (WITHOUT pleural effusion). This is a tumor that has extended to the outermost covering of the lung parenchyma, but has not "jumped" the gap (pleural space) and involved any adjacent structures. Code 45 maps to T2 and summary stage 2000 regional disease.

Code 50 – Tumor of or involving the main stem bronchus less than 2.0 cm from the carina. This is within the surgical boundaries needed to close off the main stem bronchus and generally makes the case unresectable. This code maps to T3 and summary stage 2000 regional disease.

Code 52 – Is a combination of Codes 40 (atelectasis) and 50 (tumor closer than 2 cm to the carina) and maps to T3 and summary stage 2000 regional disease

Code 53 – Is a combination of Codes 45 (visceral pleural involvement) and 50 (tumor closer than 2 cm to the carina) and maps to T3 and summary stage 2000 regional disease

Code 55 – Atelectasis or obstructive pneumonitis involving the entire lung. Code 55 maps to T3 and summary stage 2000 regional disease.



Extent of disease continued:

Code 56 – Parietal pericardium or pericardium, not otherwise specified. This is the outer covering of the sac that contains the heart. This maps to T3 and summary stage 2000 regional disease.

Code 59 – Invasion of the phrenic nerve, which maps to T3 and summary stage 2000 regional disease.

Code 60 – Direct extension to Brachial plexus; inferior branches or not otherwise specified, from the superior sulcus. The brachial plexus is the bundle of nerve branches and soft tissues of the neck. The superior sulcus is the uppermost segment of the upper lobe, which actually extends above the clavicle. Lesions in this area are sometimes called Pancoast tumors and can cause severe pain in the arm and shoulder.

Chest wall—the muscles between the ribs and covering the ribs. Direct extension to an adjacent rib is coded 73.

Diaphragm—the muscle that compresses the lungs causing exhalation and then inhalation.

Parietal pleura—this is the inside lining of the chest cavity. It is the outer pleura separated from the visceral pleura by the pleural space.

Note: For a separate lesion in the chest wall or diaphragm, see CS Mets at DX.

Involvement of any of these structures maps to T3 and summary stage 2000 regional disease.

All of Codes 61 through 80, with the exception of Code 73, map to T4. The primary reason that they are split out with different codes is because of their summary stage 77 and summary stage 2000 mappings.

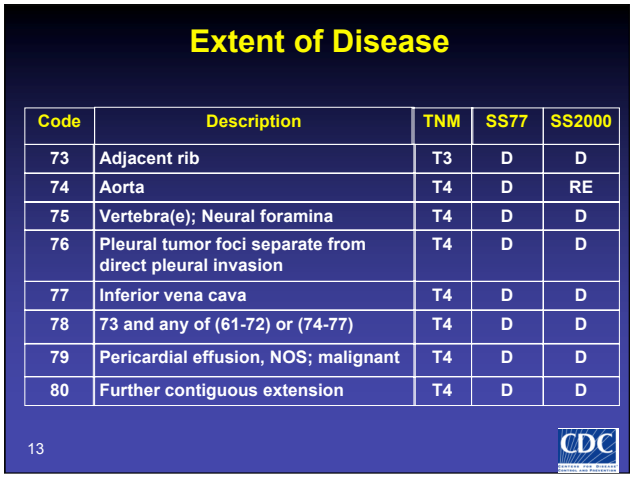
Code 61 – Superior sulcus tumor WITH encasement of subclavian vessels OR WITH unequivocal involvement of the superior branches of the brachial plexus (C8 or above). This is more extensive spread within the neck than a superior sulcus or Pancoast tumor and maps to T4 and summary stage 2000 regional disease.

Code 65 – Multiple masses or separate tumor nodule(s) in the SAME lobe; satellite nodules in the SAME lobe. It is important to identify that tumor involvement is confined within the same lobe as the primary; any involvement of a different lobe within the same lung is coded in CS Mets at Dx. Code 65 maps to T4 and summary stage 2000 regional disease. Note, however, that in Summary Stage 77 this was localized.

Code 70 – This is the principal code for mediastinal involvement. Involvement of any major blood vessel(s) (EXCEPT aorta and inferior vena cava, see codes 74 and 77) would be coded here, including azygos vein; pulmonary artery or vein; and superior vena cava (SVC syndrome). Other mediastinal structures include the carina from lung/main stem bronchus; compression of esophagus or trachea not specified as direct extension; esophagus; mediastinum, extrapulmonary or not otherwise specified; nerve(s) including cervical sympathetic (Horner's syndrome), recurrent laryngeal (vocal cord paralysis) and vagus nerve; trachea. All of these maps to T4 and summary stage regional disease.

Code 71 – Heart and visceral pericardium, which maps to T4 and summary stage distant disease.

Code 72 – Malignant pleural effusion and pleural effusion, NOS. Research has shown that about 90% of the time a non specific pleural effusion associated with a lung cancer will contain malignant cells. So this is one time that we include a condition not stated specifically to be malignant with the histologically proven malignant pleural effusions. Pleural effusion is an accumulation of fluid between the visceral and parietal pleurae that gradually compresses the lung and causes difficulty breathing. The fluid accumulation can be relieved by thoracentesis, but the effusion may build up again. Code 72 maps to T4 and summary stage distant disease.



Codes 71–80 are T4, with the exception of Code 73, which is T3. Almost all are distant in summary stage.

Code 73 – Adjacent rib maps to T3 and summary stage 2000 distant disease. More about this odd TNM mapping in a moment.

Code 74 – The aorta is one of the “great vessels” defined in the AJCC Cancer Staging Manual; it maps to T4, but is the only exception in this set of T4 codes that maps to summary stage 2000 regional disease.

Code 75 – Vertebra(e) and Neural foramina--the vertebrae are the spinal bones themselves. The neural foramina are also called intervertebral foramina, a plural term. A neural foramen (singular term) is the space through which nerve roots exit the spinal canal to form peripheral nerves and in which the nerve root ganglia lie. So this code includes the bones of the spine, the spaces between the bones, and the nerve roots of the spinal canal.

Code 76 – Pleural tumor foci separate from direct pleural invasion. These are discontinuous tumor nodules between the two layers of pleura. Any discontinuous tumor nodules outside of the pleura in the chest wall are coded in Mets at Dx.

Code 77 – The inferior vena cava is one of the “great vessels” defined in the AJCC Cancer Staging Manual. It is coded separately from other great vessels because it maps to summary stage distant disease.

Code 78 – Having direct extension to the adjacent rib in the middle of a long series of structures with codes that map to T4 created a problem when abstractors followed the rules to code the highest code—occasionally the rib code was the highest and the case would map to T3 even though there were T4 structures involved. Consequently, it was necessary to create a new Code 78 to handle the mapping discrepancy. Code 78 is a combination of Code 73 (adjacent rib) plus any of Codes 61-72 or Codes 74-77. This maps to T4 and summary stage distant disease.

Code 79 – Both pericardial effusion, not otherwise specified and malignant pericardial effusion map to T4 and summary stage distant disease.

Code 80 – Further contiguous extension maps to T4 and summary stage distant disease. Note, however, that there are a few structures specified in CS Mets at DX that might be described as distant direct extension, such as direct involvement of the sternum or skin of chest.

Extent of Disease

Code	Description	TNM	SS77	SS2000
95	No evidence of primary tumor	T0	U	U
98	Tumor not visualized; proven by malignant cells in sputum or bronchial washings	TX	U	U
99	Unknown extension; Primary tumor cannot be assessed	TX	U	U

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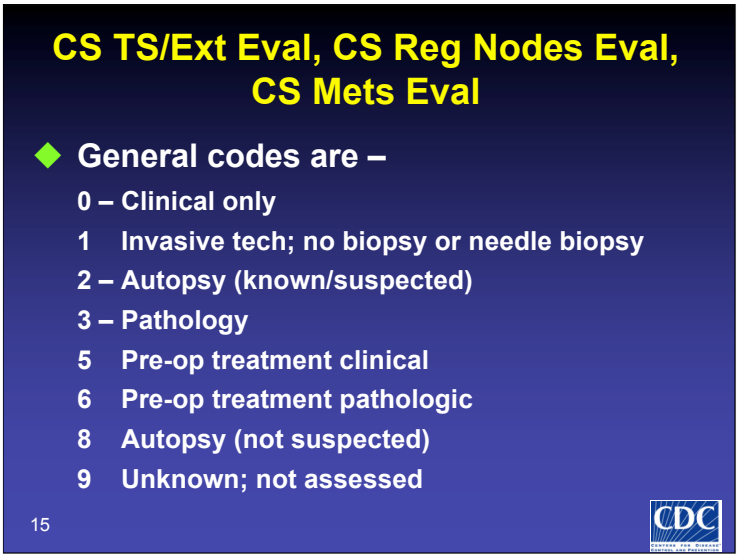
The final codes in the CS Extension Table all map to Summary Stage unknown.

Code 95 – No evidence of primary tumor. This maps to T0. Code 95 may be used when the primary tumor was removed at a different institution and no information is available, such as when the patient had a wedge resection at one facility and goes to another facility for a wider resection yielding no residual tumor. Code 95 is infrequently used.

Code 98 – Tumor proven by presence of malignant cells in sputum or bronchial washings, but not visualized by imaging or bronchoscopy; “occult” carcinoma. This maps to the special definition of TX for lung cancer.

The difference between Codes 95 and 98 and Code 99 is that some effort is made to look for tumor in Codes 95 and 98, yet no tumor can be found; whereas, Code 99 means that no attempt was made to assess the primary tumor, or the assessment that was made did not result in a specific code.

Code 99 – Unknown extension; Primary tumor cannot be assessed; Not documented in patient record. This maps to TX.



The CS Eval fields for lung extension and lymph nodes are slightly different from the standard table for this field because of variances in the lung chapter of the AJCC Cancer Staging Manual. CS tumor size/extension eval, CS regional lymph nodes eval, and CS mets at diagnosis evaluation fields are coded as follows for lung cancer:

•Code 0 is for clinical findings only. These are basically the physical exam (that won't show much regarding extension of the primary tumor) and imaging, which includes chest X-ray, CT scan of the chest, PET, and MRI.

•Code 1 is for evaluation based on endoscopic exam, diagnostic biopsy, including fine needle aspiration, or other invasive techniques including surgical observation without biopsy. Based on the discussion of clinical and pathologic criteria in the AJCC Cancer Staging Manual, on which the CS manual is largely based, biopsy information obtained from procedures listed in Code 1 maps to pathologic T or N for lung, even though the procedures themselves do not meet the definition of a resection. For example, a positive endoscopic biopsy of a mediastinal mass should be coded to TS/Ext Eval code 1, which will map to pT.

•The remainder of the CS TS/Extension Evaluation Table remains the same as the standard table.

•Code 2 is for autopsy cases only with known or suspected disease. This code will be used only infrequently.

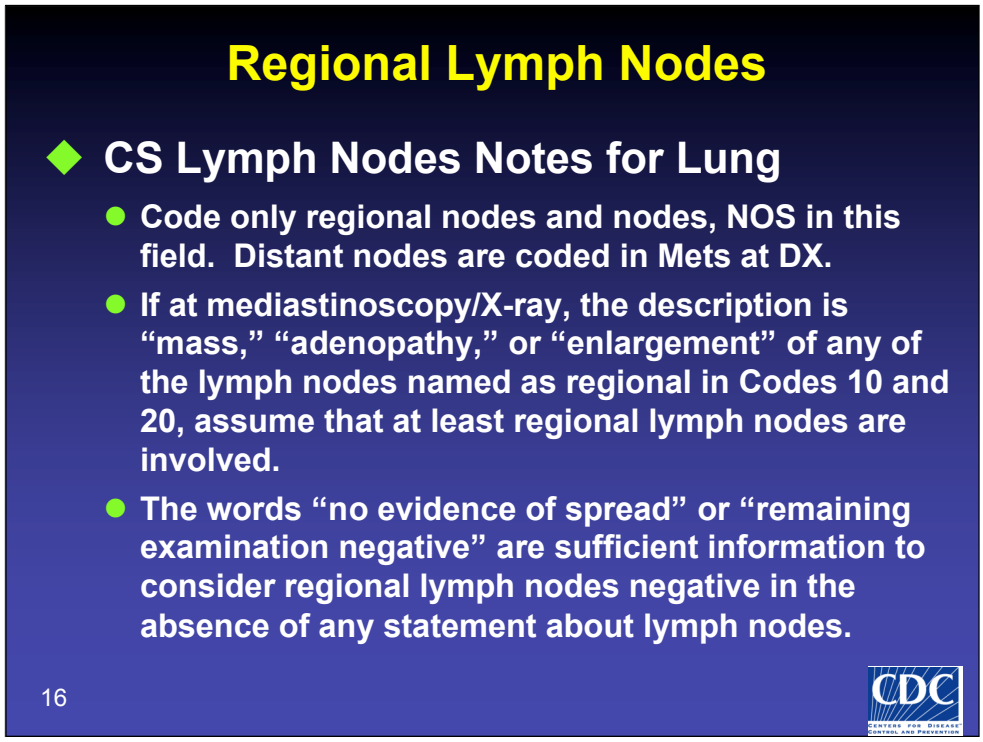
•Code 3 is used when surgical resection is performed without presurgical systemic treatment or radiation, or if it is unknown whether there was presurgical systemic treatment or radiation. This is the standard usage of code 3 for most other sites and maps to pathologic T, N, or M.

•Code 5 is used when a surgical resection is performed, but the patient had presurgical systemic treatment or radiation. The information coded is based on clinical findings.

•Code 6 is used when a surgical resection is performed and the patient had presurgical treatment or radiation. The information coded is based on pathologic findings. Abstractors might find they use this code more often for lung cases than for other sites.

•Code 8 is used with autopsy only cases and in cases in which the tumor was unsuspected. This is the true "diagnosed at autopsy" code and would be marked as such in the Diagnostic Confirmation field as well.

•Code 9 is information unknown; not assessed.

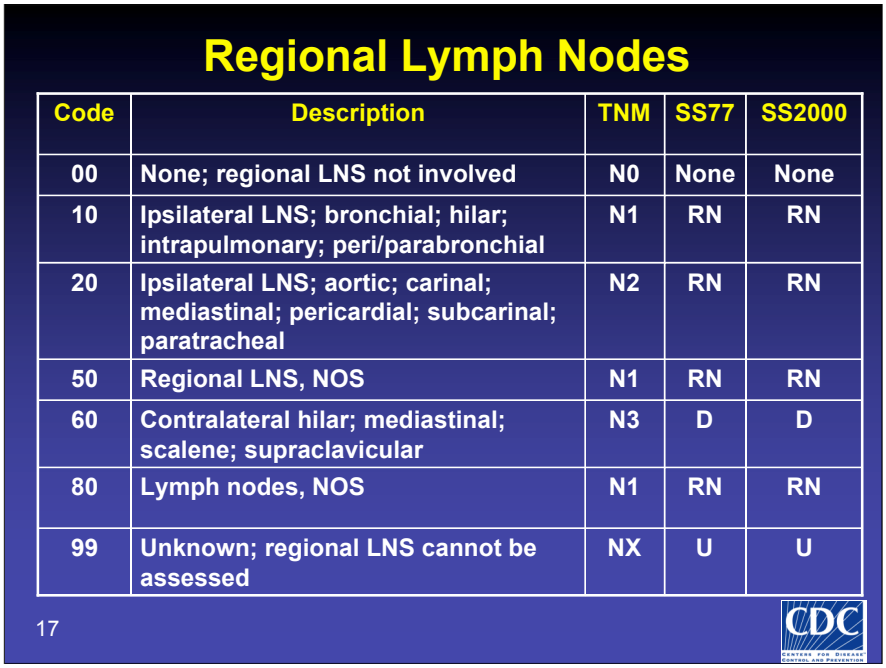


There are a few rules for CS regional lymph nodes that are specific to lung cancer only. They are as follows:

Code only regional nodes and nodes, NOS in this field. Distant nodes are coded in the field Mets at DX.

If at mediastinoscopy/X-ray, the description is “mass,” “adenopathy,” or “enlargement” of any of the lymph nodes named as regional in codes 10 and 20, assume that at least regional lymph nodes are involved.

The words “no evidence of spread” or “remaining examination negative” are sufficient information to consider regional lymph nodes negative in the absence of any statement about lymph nodes.



CS regional lymph nodes are coded as follows:

Code 00 – Means none, no regional lymph node involvement. Code 00 maps to N0 and summary stage 2000 None.

Code 10 – Regional lymph nodes, ipsilateral includes the lymph nodes in the same lung as the primary cancer. These include Bronchial (along any bronchus); and Hilar, also called bronchopulmonary, proximal lobar, or pulmonary root nodes. The lesser nodes more peripheral in each lung are the intrapulmonary nodes, including involvement by direct extension; interlobar; Lobar; Segmental; Subsegmental and Peri/parabronchial. All of the nodes in Code 10 are within the lung tissue or hilum of the lung where the primary tumor developed. Involvement of any of these nodes maps to N1 and summary stage regional lymph nodes.

The lymph nodes of the mediastinum include Aortic (above diaphragm), NOS; Peri/para-aortic, NOS: Ascending aorta (phrenic) and subaortic (aortico-pulmonary window); Carinal (tracheobronchial) (tracheal bifurcation); Mediastinal, NOS (Anterior and Posterior); Pericardial; Peri/paraesophageal; Peri/paratracheal, NOS: Azygos (lower peritracheal); Pre- and retrotracheal, NOS: Precarinal; Pulmonary ligament and Subcarinal. Many times the surgeon or endoscopist will not be specific and will call the nodes mediastinal nodes NOS (not otherwise specified).

Code 20 – Ipsilateral mediastinal lymph nodes. In other words, the lymph nodes are in the half of the mediastinum on the same side as the primary cancer. Involvement of any of these nodes maps to N2 and summary stage regional lymph nodes. The lymph nodes along the midline, such as the subcarinal, pre- and retrotracheal, are assumed to be ipsilateral to the involved lung.

Code 50 – Regional lymph node(s), NOS. Use this code when more specific information about lymph nodes is not given but the nodes are determined to be regional. Because of the TNM downstaging rule, Code 50 maps to N1 and summary stage 2000 regional lymph nodes.

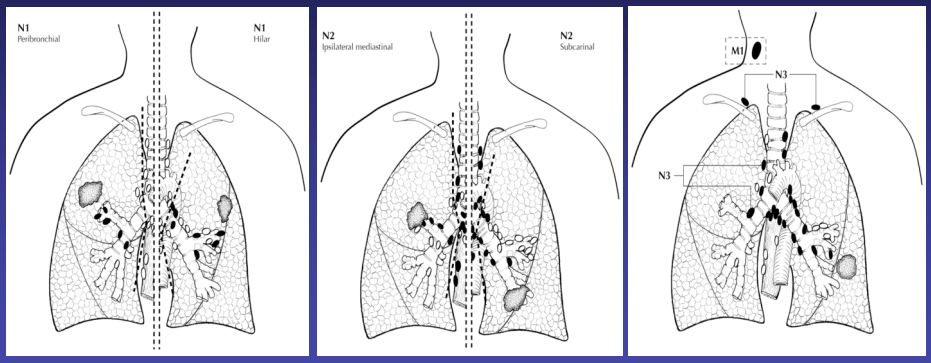
Code 60 – Includes the mediastinal lymph nodes mentioned previously when they are in the opposite lung or on the opposite half of the mediastinum from the primary cancer, in other words, contralateral. Code 60 also includes bilateral hilar lymph nodes or bilateral mediastinal nodes. In addition, the lymph nodes above the clavicles are included in Code 60, whether ipsilateral or contralateral. These are the scalene and supraclavicular nodes. Involvement of even one of these nodes maps to N3 and summary stage 2000 distant disease.

Code 80 – Lymph nodes, NOS. Use this code when it is unknown whether the involved lymph nodes are regional or distant (in other words, this code is used VERY infrequently). Code 80 maps to N1 and summary stage regional lymph nodes because of the downstaging rule.

Code 99 – Unknown; not stated; Regional lymph node(s) cannot be assessed; Not documented in patient record. This code maps to NX and to unknown in the summary staging system.

Regional Lymph Node Mappings

Code 10 | Code 20 | Code 60



Source: AJCC Cancer Staging Illustrations from the AJCC Cancer Staging Atlas. Springer, 2007. Used with permission.

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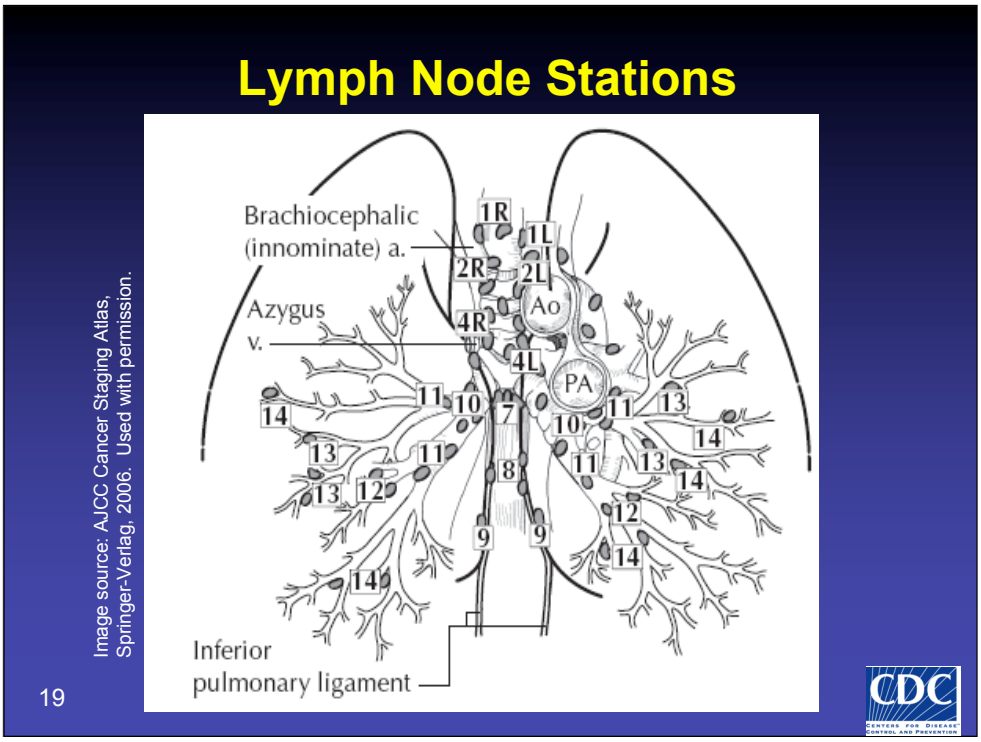
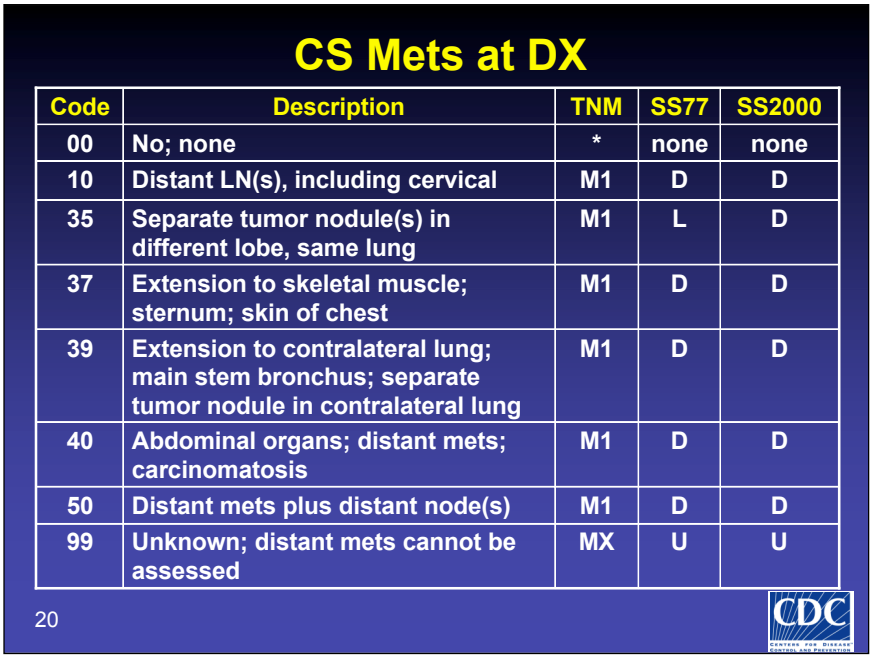
These illustrations show the relative locations of involved lymph nodes to the primary tumor, the CS Regional Lymph Nodes codes, and the TNM N category mapping.



You might read in an operative or pathology report about lymph nodes described by letters and numbers, such as 2R, 12, or 4L. These are referred to as lymph node "stations" and each number always refers to the same lymph node chain. The numbers are not the same as ICD-O codes or collaborative staging codes for regional lymph nodes, but they do give a good indication of which nodes are involved.

Numbers having one digit (1 though 9) are in the mediastinum. Two digit numbers 10 through 14 are within the boundaries of the pleura of each lung. The numbers can be further labeled as R for right or L for left. The AJCC Cancer Staging Manual identifies each number with the corresponding lymph node chain name.

What abstractors need to understand is that these numbers help identify whether N1, N2, or N3 lymph nodes are involved, but the laterality of the primary tumor must also be known. Two-digit numbers on the same side as the primary tumor are CS Lymph Node Code 10 and map to N1. Two-digit numbers on the same side of the mediastinum as the primary tumor are CS Lymph Node code 20 and map to N2. One digit numbers on the opposite side of the mediastinum and two digit numbers in the opposite lung are CS Lymph Node Code 60 and map to N3.



Code	Description	TNM	SS77	SS2000
00	No; none	*	none	none
10	Distant LN(s), including cervical	M1	D	D
35	Separate tumor nodule(s) in different lobe, same lung	M1	L	D
37	Extension to skeletal muscle; sternum; skin of chest	M1	D	D
39	Extension to contralateral lung; main stem bronchus; separate tumor nodule in contralateral lung	M1	D	D
40	Abdominal organs; distant mets; carcinomatosis	M1	D	D
50	Distant mets plus distant node(s)	M1	D	D
99	Unknown; distant mets cannot be assessed	MX	U	U

CS Mets at diagnosis codes are as follows. All of these codes except 00 and 99 map to M1 in the TNM system and to distant in summary stage.

Code 00 – No; none. There is a note on Code 00 that says "For CS Mets at DX Code 00 only, the M category is assigned based on the value of CS Tumor Size, using the Mets Size Table for Mets at DX Code 00 for this site." What this means is that the computer mapping algorithm looks at the tumor size code, especially Codes 997 and 998, to determine if there is involvement of more than one lobe of the lung. If so, Code 00 (no distant metastases) is actually M1 because of the intrapulmonary spread of the tumor.

Code 10 – Distant lymph node(s), including cervical nodes. These are the nodes in the neck above the scalene and supraclavicular nodes that are defined as regional (N3).

Code 35 – Separate tumor nodule(s) in different lobe, same lung. Even though the separate tumor nodule is within the lung, the prognosis for the patient is similar to that of a patient with distant metastases, so this code maps to M1. Note that in Summary Stage 1977, this case would be local stage.

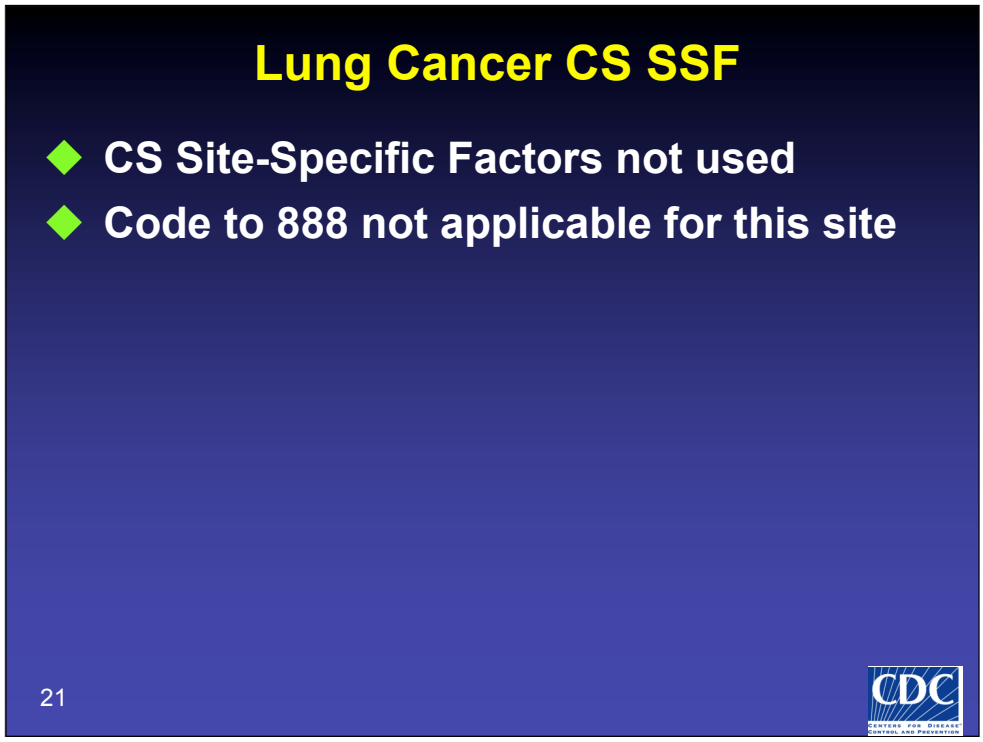
Code 37 – Extension to Skeletal muscle; Sternum; Skin of chest. These might be described as distant direct extension, in other words direct tumor spread from the primary site through the pleura and chest wall to the external tissues of the chest.

Code 39 – Extension to Contralateral lung; Contralateral main stem bronchus; Separate tumor nodule(s) in contralateral lung. These tumors also have a prognosis similar to that of hematogenous metastases.

Code 40 – Abdominal organs; Distant metastasis except distant lymph node(s) (Code 10) except those specified in codes 35 to 39, including separate lesion in the chest wall or diaphragm; Distant metastasis, NOS; Carcinomatosis. These are the true discontinuous, blood borne metastases we usually see in Code 40.

Code 50 – Distant metastases + Distant node(s), (10) + any of [(35) to (40)]. Don't forget about this combination code when you have both distant mets and distant nodes involved.

Code 99 – Unknown if distant metastasis; Distant metastasis cannot be assessed; Not documented in patient record. Code 99 maps to MX in TNM and to unknown in summary stage. Here again, the computer mapping algorithm looks at tumor size for additional information that might be mapped to M1 based on diffuse involvement of a lung.

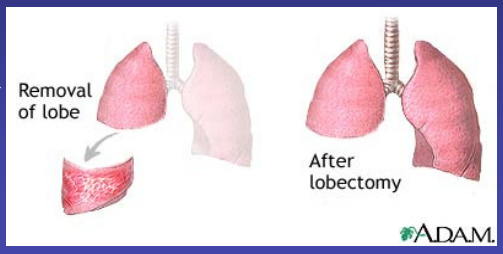


Site specific factors are not used for lung cancer and are all coded to 888.

Advanced Abstracting Lung Cancer

IV. TREATMENT

Surgery and Adjuvant Therapy



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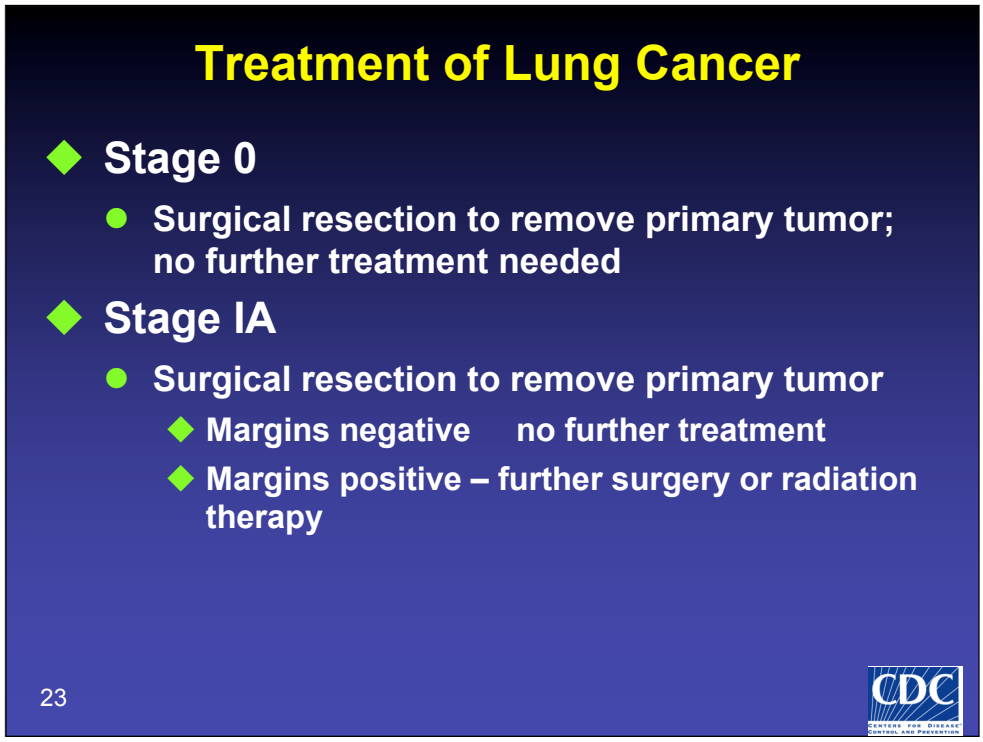
CDC

Now that we have been through the details of the TNM and Collaborative Staging systems, it is time to take a look at the various ways lung cancer can be treated. Because the outcome of a lung cancer diagnosis is so often dismal, there has been much research into more effective ways to treat the disease. Lung cancer is frequently treated by more than one modality, as we shall see.

If the lung cancer is found early, it can be treated surgically. The removal of the lobe is noted in the left side of the illustration (lobectomy). The illustration on the right shows what the lungs look like after the lobectomy.

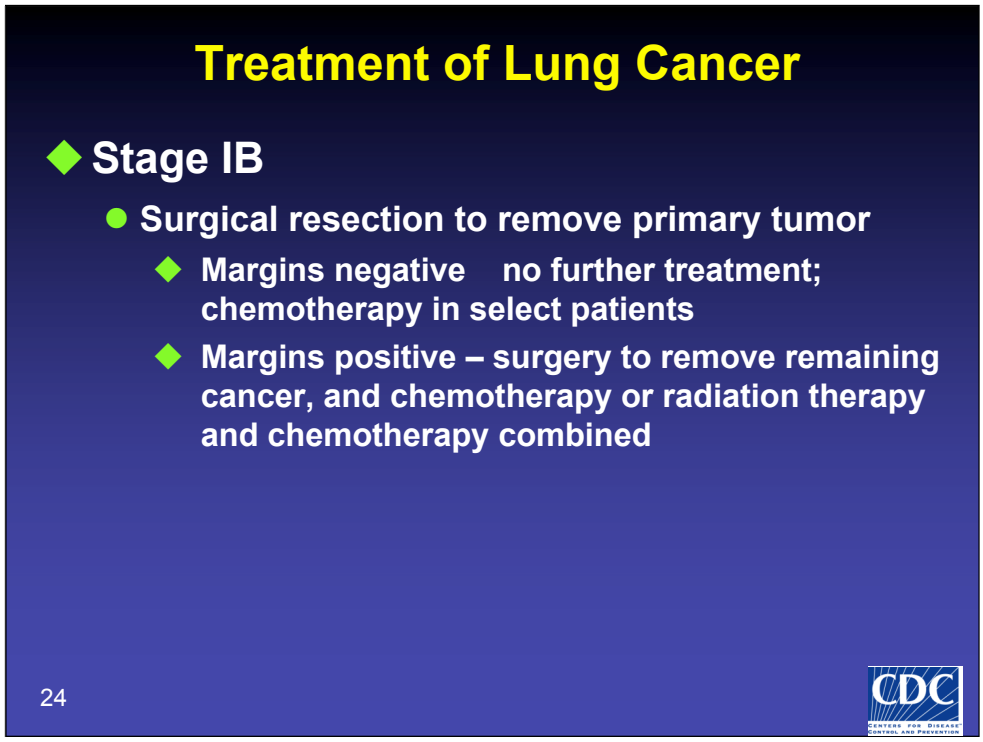
Note: For small cell lung cancer, surgery is usually not suggested. The cancer has usually spread at the time of diagnosis. If the cancer is considered limited stage, chemotherapy with or without radiation therapy might be recommended. If the patient is in good health, the usual therapy is chemotherapy and radiation therapy combination. If the patient's health is poor, he or she might have chemotherapy alone.



Surgical treatment is the best chance for cure for lung cancer. If the cancer is in situ, then surgical resection is the only treatment needed.

For Stage IA lung cancer, a surgical resection is also recommended. If the margins are negative, then further treatment is not usually suggested. If the margins are positive, then further surgery is needed or radiation therapy.

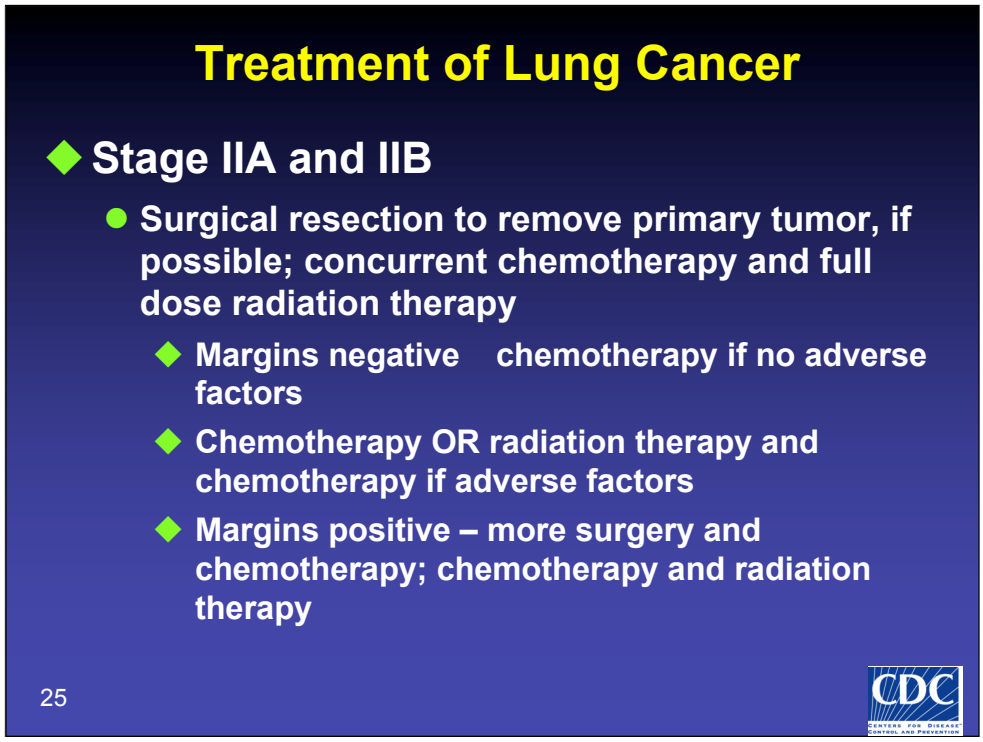
(Source: www.nccn.org)



For stage IB lung cancer, surgical resection is recommended. If the margins are negative no further treatment should be needed. However, for larger tumors chemotherapy should be considered.

If the margins are positive on resection, then further surgery could be suggested, as might be chemotherapy, or radiation and chemotherapy combined. The combination of radiation and chemotherapy is frequently used for lung cancer treatment.

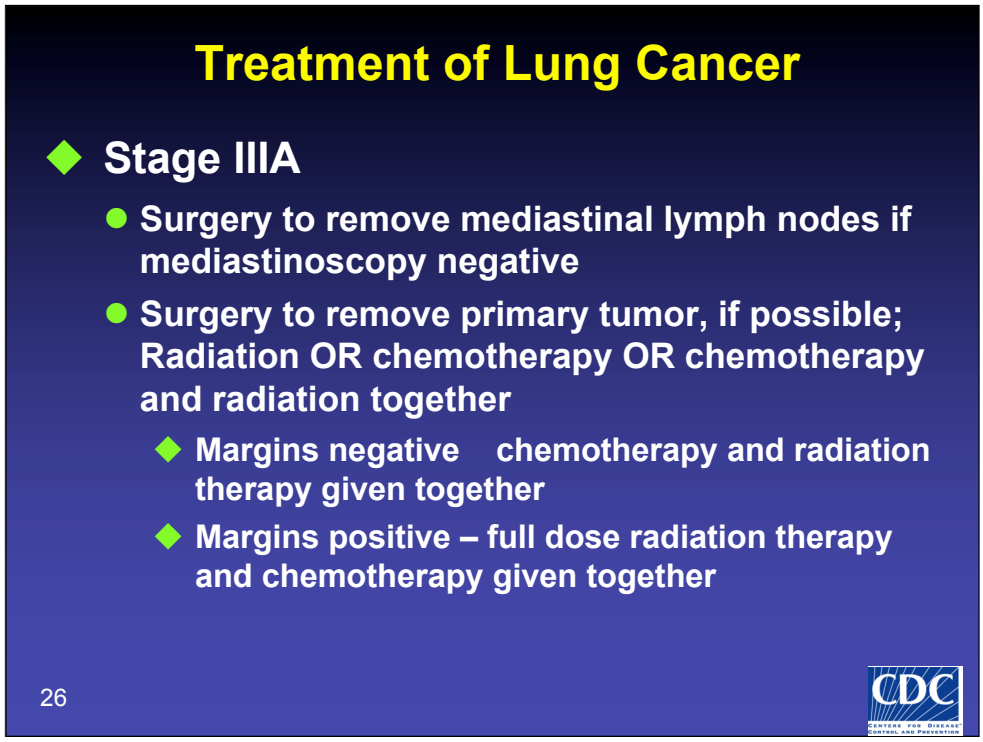
(Source: www.nccn.org)



Stage IIA and IIB lung cancer are treated with surgical resection if at all possible. However, there are times when the tumor is not operable. In those cases, chemotherapy and full dose radiation therapy is given. If surgery is performed and the margins are negative, chemotherapy can be offered. If the patient has other co-morbid conditions that do not allow for surgery, chemotherapy or a combination of radiation therapy and chemotherapy will be given. If surgical margins are positive, more surgery might be needed with the addition of chemotherapy and radiation therapy.

Extensive stage small cell lung cancer patients in good health can receive chemotherapy. But if in poor health, palliative treatment is usually the recommendation.

(Source: www.nccn.org)

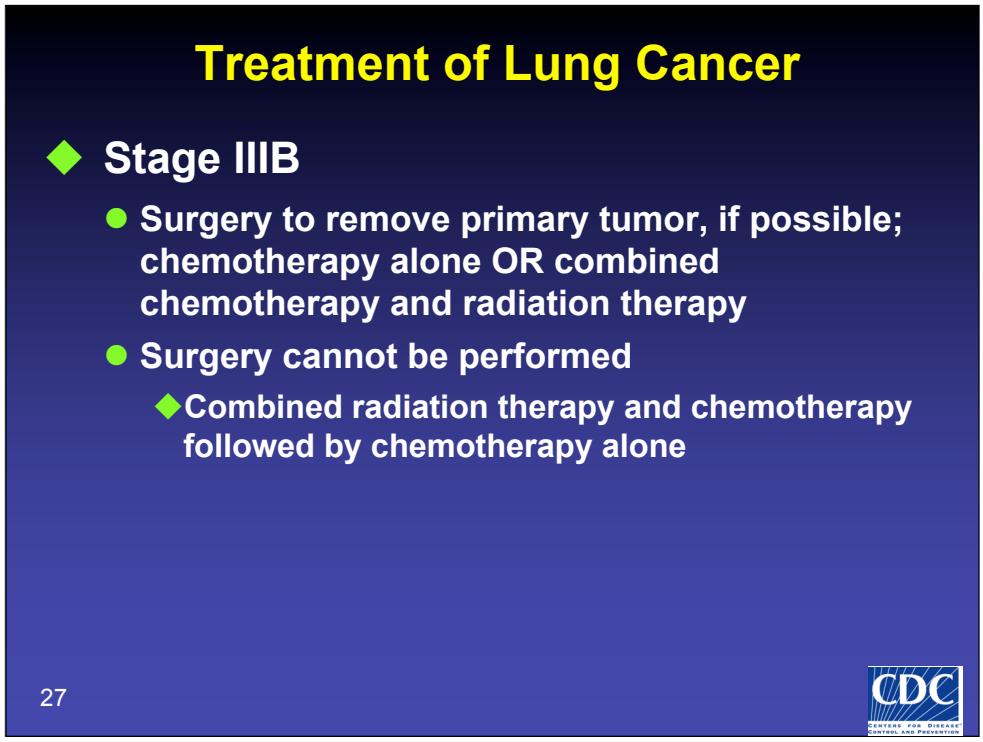


For stage IIIA lung cancer, a mediastinal lymph node dissection is recommended if mediastinal lymph node biopsy is negative.

If cancer is found in the mediastinal lymph nodes and the surgical resection margins are negative, then chemotherapy with or without radiation therapy is recommended. For positive surgical margins, full dose radiation therapy in combination with chemotherapy is recommended.

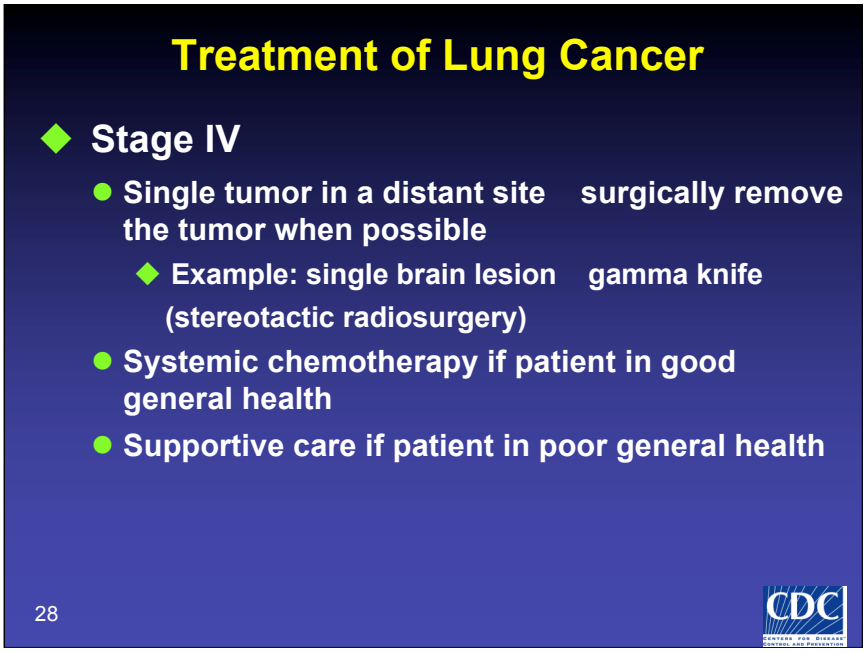
For patients who are not surgical candidates, chemotherapy and radiation therapy is the recommended treatment.

(Source: www.nccn.org)



Stage IIIB lung cancer patients are seldom surgical candidates. Whenever possible the surgeon will try to remove the tumor. If this is successful, then chemotherapy is recommended after surgery. If the surgeon concludes that complete resection is not possible, then radiation therapy and chemotherapy combined, followed by chemotherapy alone are recommended.

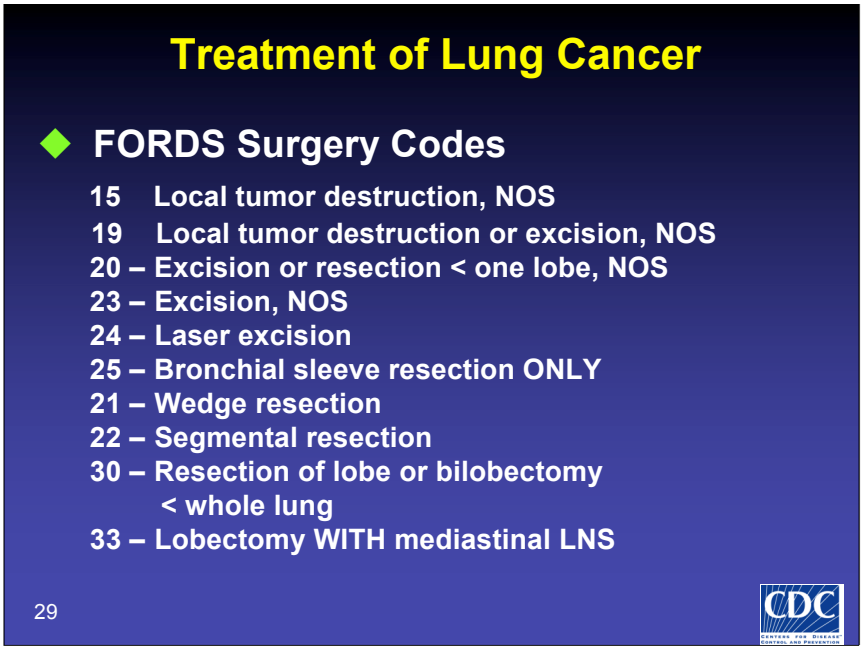
(Source: www.nccn.org)



Sometimes there is only one lesion identified in a distant site. When possible, the lesion should be surgically removed. For example, a single lesion in the brain can be treated with a gamma knife. The patient will have a better survival outcome if the treatment is successful. If there are multiple sites of metastatic disease, surgery is not recommended.

Various clinical trials and treatment options can be offered depending on the patients general health. If the patient is in good general health, systemic chemotherapy might be an option. However, if the patient is in poor general health, supportive or palliative care might be the best choice.

(Source: www.nccn.org)



Surgical codes for lung cancer are as follows:

Code 15 – Local tumor destruction and no specimen sent to pathology from the surgical events. It is possible to vaporize or otherwise destroy a tumor without excising it. When this occurs, the usual code is 15.

Code 19 – Local tumor destruction or excision and it is unknown whether a specimen was sent to pathology for surgical events. Use this code only for cases diagnosed prior to 2003 and converted to the current FORDS surgery codes.

Code 20 – Excision or resection of less than one lobe, not otherwise specified. Use this code when the tumor is removed, but not an entire lobe, and the procedure is not well described.

Code 23 – Excision, not otherwise specified—this is another non-specific code.

Code 24 – Laser Excision; usually used for palliation when the patient has difficulty breathing because of a blocked bronchus.

Code 25 – Bronchial sleeve resection ONLY. This is an interesting procedure (not commonly performed), in which only a portion of a bronchus is removed and the remaining distal bronchus is reattached to the proximal bronchus, somewhat like an anastomosis is performed in the colon.

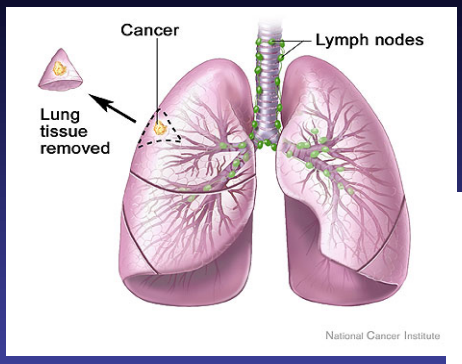
Code 21 – Wedge resection—removes only a small amount of tissue surrounding the tumor.

Code 22 – Segmental resection—removes one of the 10 segments of the right lung or one of the 8 segments of the left lung, but not an entire lobe.

Code 30 – Resection of a lobe or bilobectomy on right, but less than the whole lung. (If you do a bilobectomy on the left, that is equivalent to a pneumonectomy, which has a higher code.)

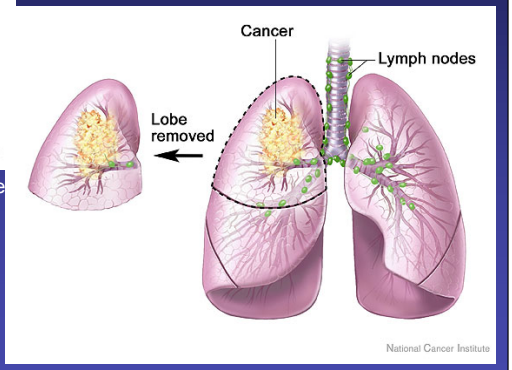
Code 33 – Lobectomy WITH mediastinal lymph nodes. If mediastinal lymph nodes are removed with a lobectomy, they are coded here AND in scope of regional lymph nodes.

Wedge Resection and Lobectomy



Images: National Cancer Institute

Code 21 Wedge Resection



Code 30-33 Lobectomy

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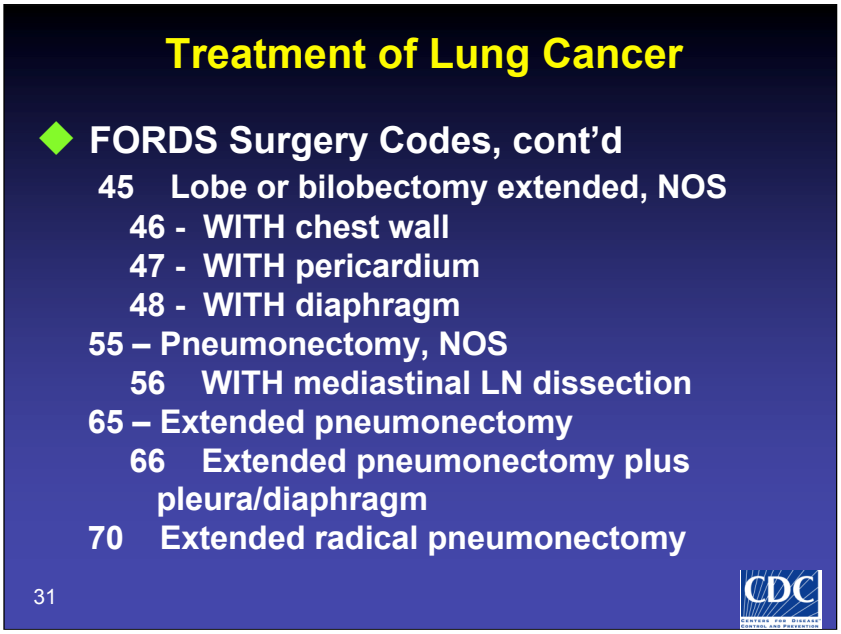
In a segmental resection (code 22), one of the ten segments in the right lung or eight segments in the left lung is removed. In a lobectomy, one of the five lobes of the lung would be entirely removed, as shown in this illustration. Code 33 would include both a lobectomy and resection of some of the mediastinal lymph nodes between the lungs.



FORDS surgical codes continued:

Codes 45 through 48 are various procedures that remove more than just one lobe on the left or one or two lobes on the right.

Code 45 – Lobe or bilobectomy extended, not otherwise specified. Use this code if the specific structures removed in addition to the lobectomy or bilobectomy are not known.

Code 46 – Lobe or bilobectomy with chest wall resection. Both the surgery report and the pathology report will indicate that more than just a piece of rib was removed for access to the lung.

Code 47 – Lobe or bilobectomy with pericardium resection. This is a very delicate procedure in which a portion of the sac containing the heart is removed.

Code 48 – Lobe or bilobectomy with diaphragm resection. Direct tumor extension to the diaphragm might require resection of part of the diaphragm.

Code 55 – Pneumonectomy, not otherwise specified. This code includes complete pneumonectomy, Sleeve pneumonectomy, Standard pneumonectomy, Total pneumonectomy, Resection of whole lung. Codes 56 through 70 include additional tissues.

Code 56 – Pneumonectomy with mediastinal lymph node dissection. Code the mediastinal lymph node dissection performed with a pneumonectomy both here and in Scope of Regional Lymph Nodes.

Code 65 – Extended pneumonectomy might include excision of parietal pleura, pericardium, and/or chest wall, with mediastinal lymph node dissection.

Code 66 – Extended pneumonectomy plus the pleura/diaphragm

Code 70 – Extended radical pneumonectomy

All of these radical and extended radical pneumonectomy procedures are associated with high operative and postoperative mortality.

There are also codes of 80, resection of lung, not otherwise specified, and 90, Surgery, not otherwise specified. These last two codes should be used only infrequently.

Pneumonectomy

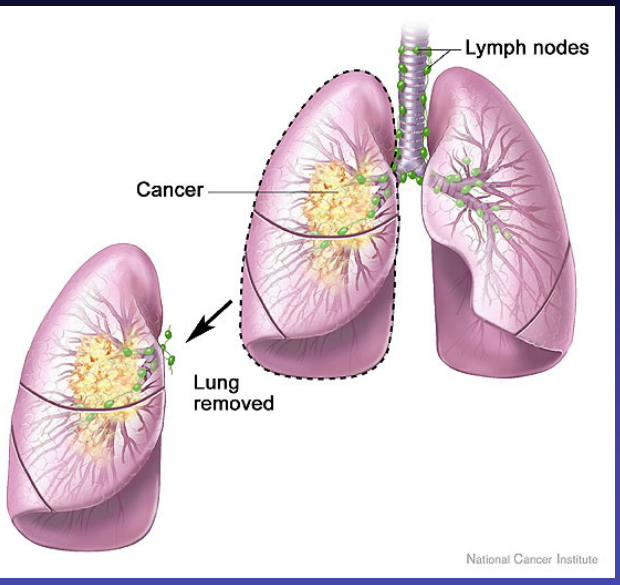
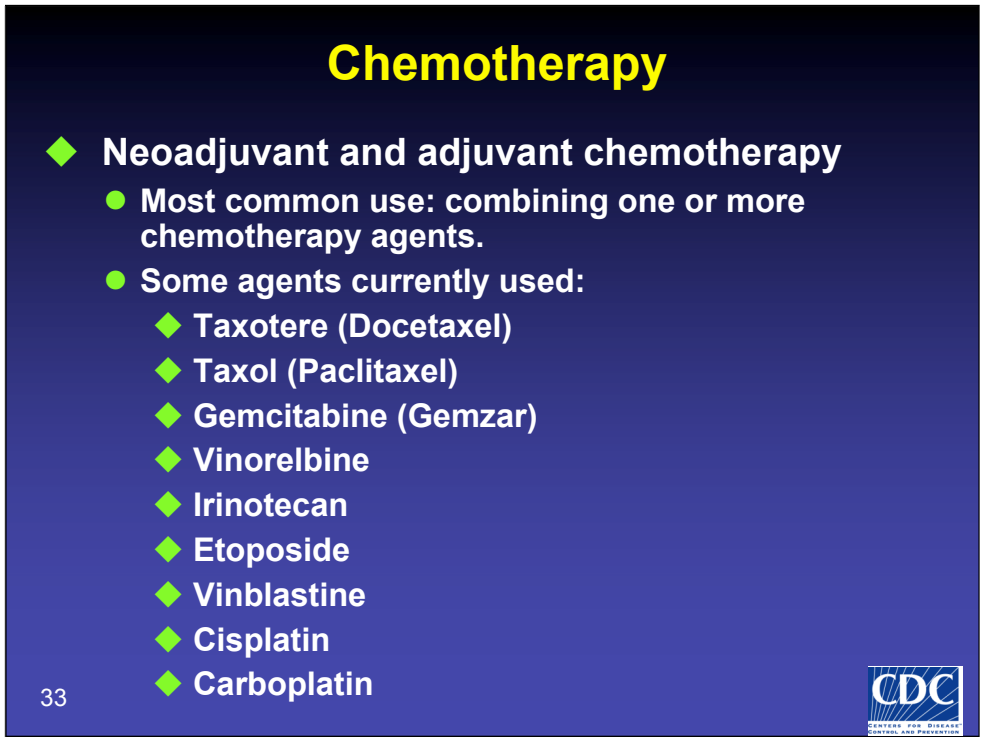


Image: National Cancer Institute

32

Codes 55 though 70 involve removal of an entire lung, as shown in the illustration. The pneumonectomy might also include removal of mediastinal lymph nodes or other structures in the thorax.

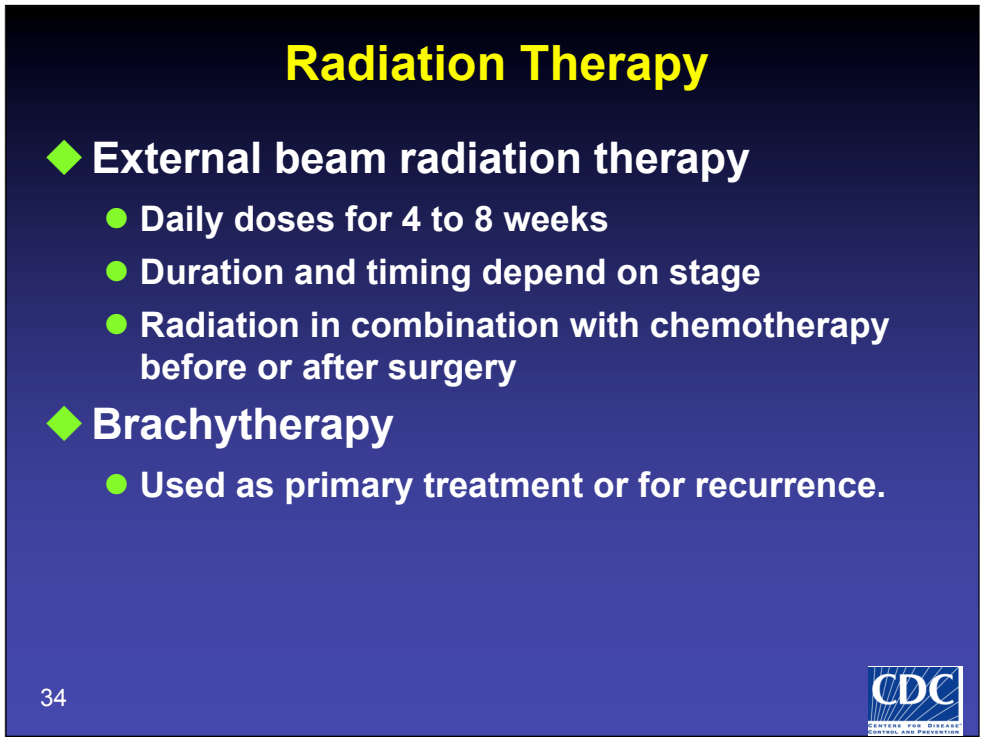


Non-small cell lung cancer treatment will include one or more chemotherapy agent combinations. Taxotere, taxol, gemcitabine, Vinorelbine, Irinotecan, Etoposide, Vinblastine, Cisplatin and Carboplatin are agents currently being used in combinations. Refer to SEER Rx for more information on any of these agents and agents not listed.

Small cell lung cancer combinations include similar agents.

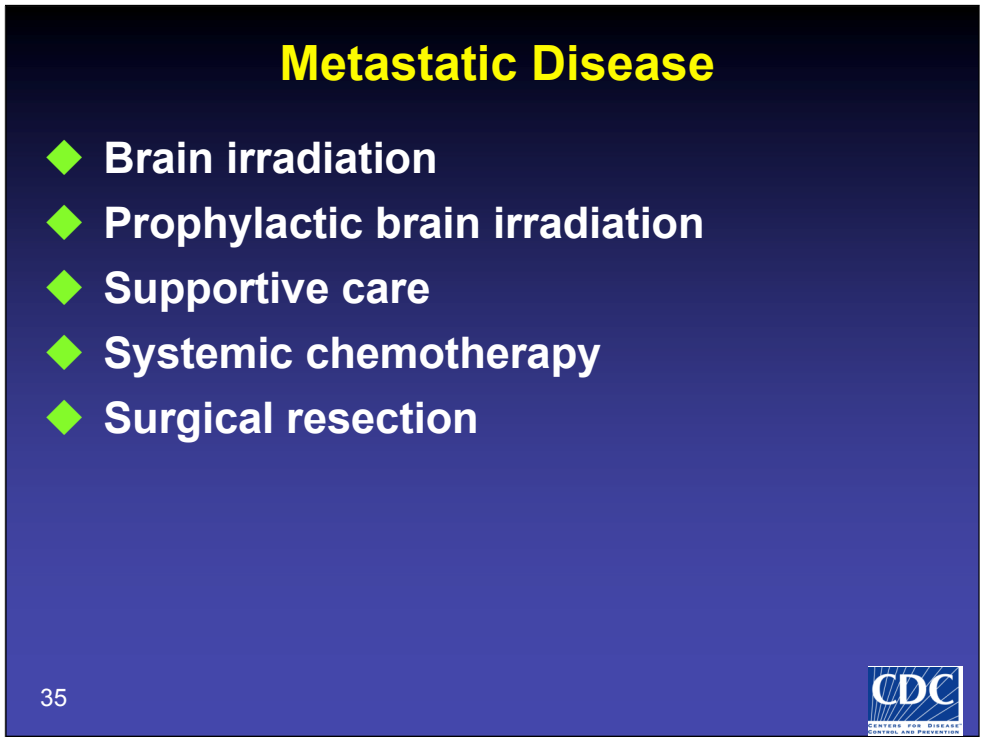
Chemotherapy cycles generally last about 21 to 28 days and full treatment involves 4 to 6 cycles.

Chemotherapy can be used before surgery in the neoadjuvant setting to shrink the tumor so that it can be surgically removed.



External beam radiation therapy is the most common type of radiation used to treat lung cancer. The patient is usually given daily doses of radiation for a period of 4 to 8 weeks. The exact duration and timing of therapy is dependant on the stage of the cancer at diagnosis. Radiation can be given in combination with chemotherapy either before or after surgery.

Brachytherapy (short range internal radiation therapy), which involves placing a small pellet of radioactive material in the lung and removing it after a carefully calculated amount of time, can be used for both primary treatment and for recurrence of lung cancer.



Brain irradiation is sometimes considered as part of stage IV treatment of lung cancer, however controversial. In cases of small cell lung cancer, prophylactic brain irradiation could be given because small cell carcinoma is known to metastasize to the brain. This practice is not as common as it once was.

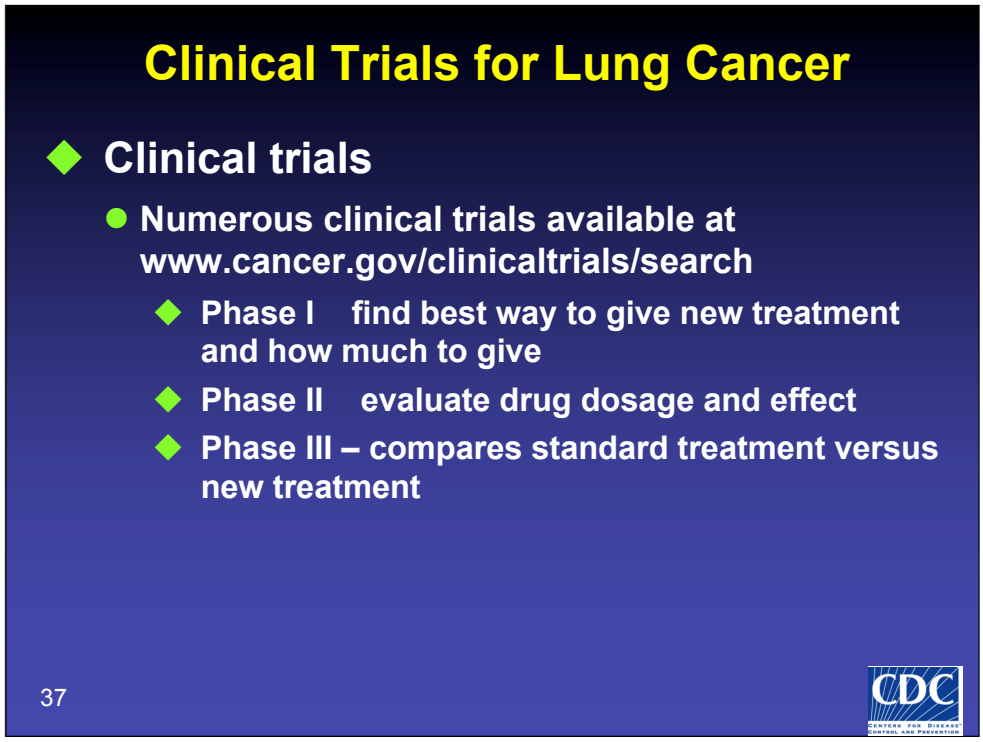
Supportive care is also an option for metastatic disease, especially when the patient is in poor general health. Systemic chemotherapy is often used to treat metastatic disease. Second line treatments include Docetaxel, Erlotinib, or Pemetrexed.

Surgical resection of a single metastatic lesion can be done to relieve symptoms or help control spread of the cancer.

Palliative or supportive care are measures taken to relieve symptoms and improve quality of life. These measures are not curative in intent. They are normally related to pain management. Controlling pain in the cancer patient is extremely important. Opioids are commonly used to treat the pain of cancer patients. Opioids include Codeine, Morphine, Methadone, and Oxycodon.

Laser surgery is used to destroy part of the tumor that could be causing obstruction of the airway or severe pain.

Photodynamic therapy is a procedure that involves the injection of an agent that is attracted to cancer cells, followed by application of a beam of light aimed at the lesion through a bronchoscope. PDT is used to help destroy part of the tumor that might be obstructing the airway.

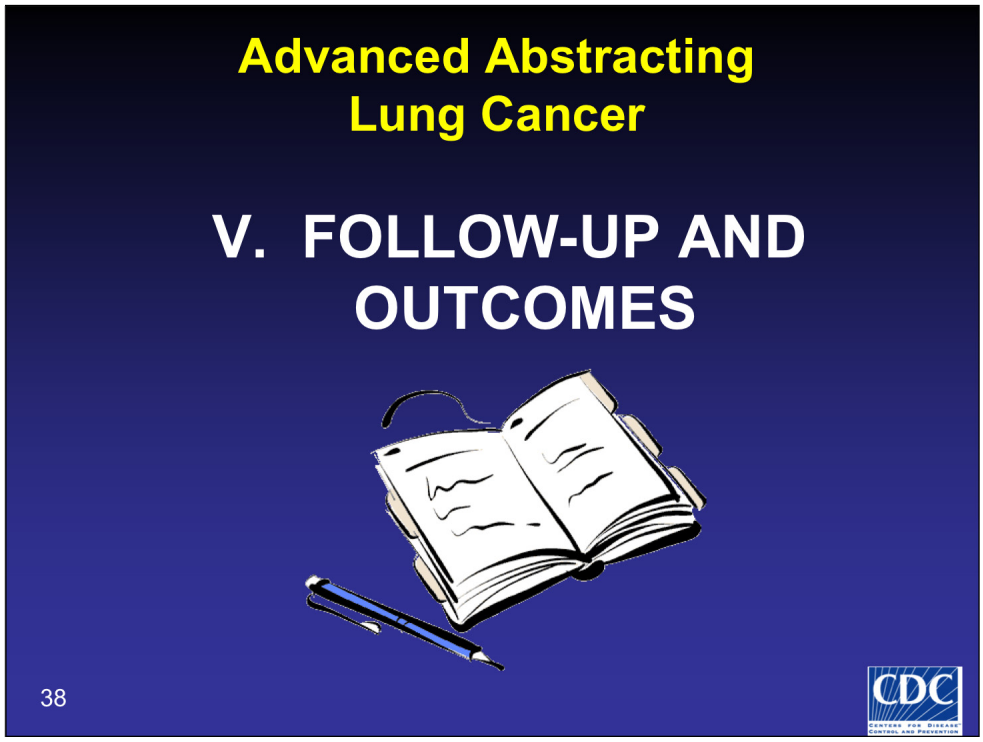


Clinical trials are available for both non-small cell lung cancer and small cell lung cancer. A complete list of clinical trials is available on the NCI Web site shown on the slide.

Phase I clinical trials look for the best way to give a new treatment and how much of it can be given safely.

Phase II clinical trials are designed to evaluate if the drug works and provides more information on safety.

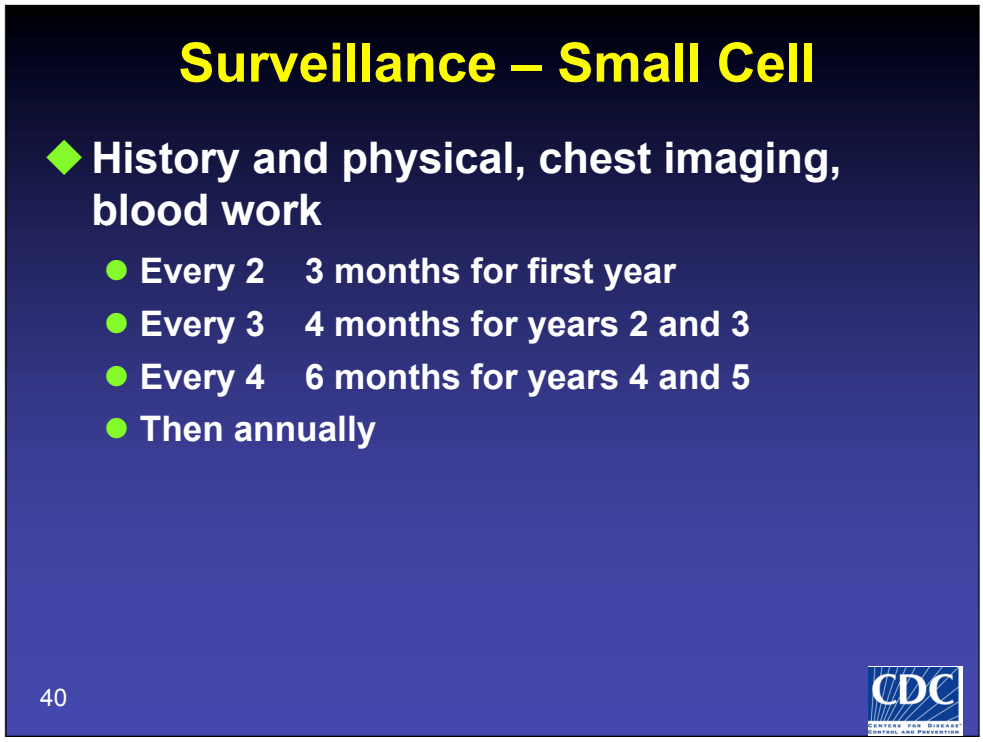
Phase III clinical trials evaluate standard treatment type/drug against a new treatment type/drug. These studies can be stopped early if one drug proves to have undesired side effects or if one drug has much better results than the other.



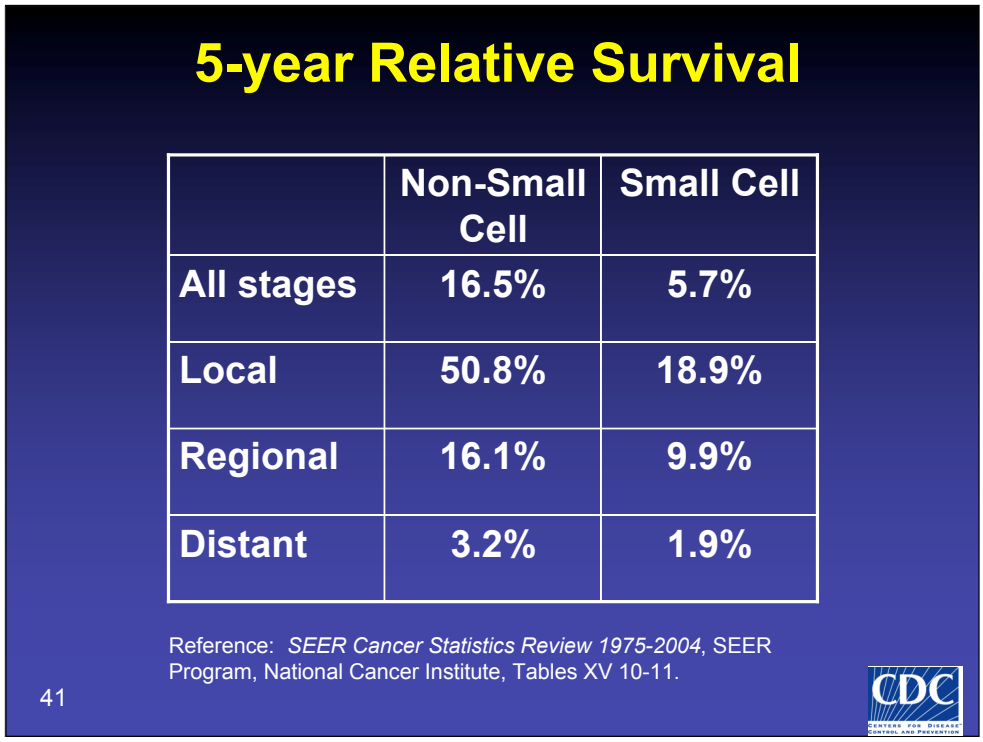
This section discusses follow-up of lung cancer patients and outcome measures, both of which are extremely important in data utilization. Survival data cannot be tabulated without accurate follow-up information. Outcomes analysis are vital to the role of the registry as a whole.

We will discuss processes for successful follow-up and outcomes.

The National Comprehensive Cancer Network guidelines for non-small cell lung cancer recommend that a patient be followed with an H&P and contrast-enhanced CT scan of the chest every four to six months for the first two years after diagnosis. At that point, the surveillance can be changed to an annual history and physical with a non-contrast enhanced CT scan of the chest. Locoregional recurrences can be treated in much the same manner as initial diagnosis of endobronchial or intrapulmonary lesions, with radiation, surgical resection if possible, or chemoradiation. Distant metastases would be treated primarily with palliative radiation.

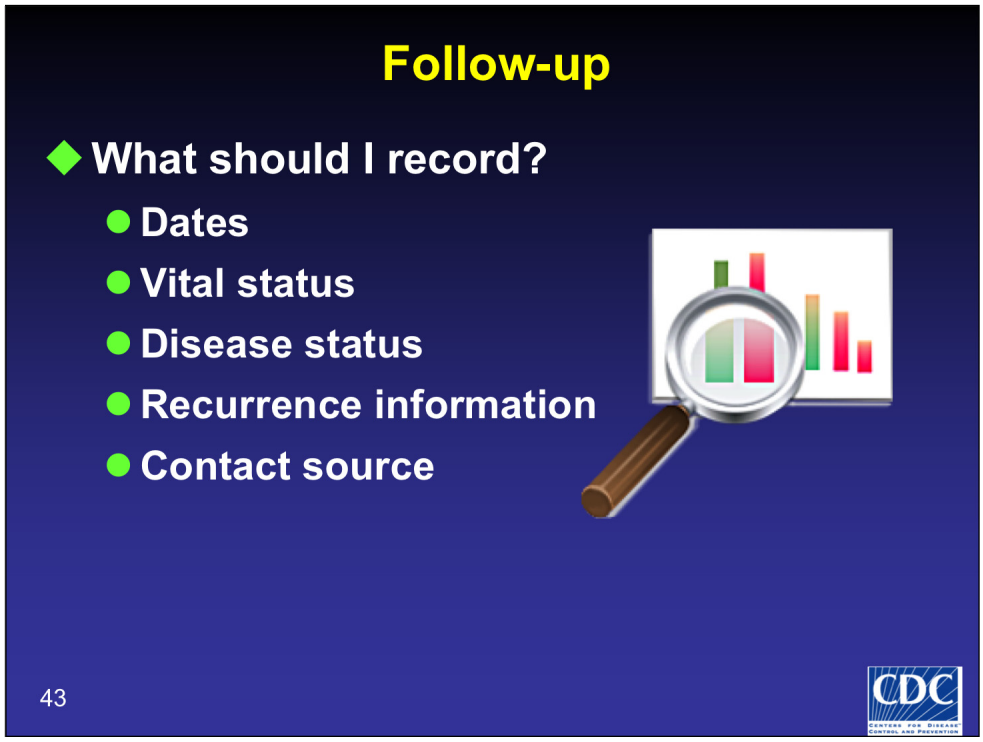


The National Comprehensive Cancer Network guidelines for small cell lung cancer recommend that a patient be followed with an H&P, chest imaging, and blood work every 2 to 3 months for the first year after completion of initial treatment, then every 3 to 4 months during years 2 and 3, then every 4 to 6 months during years 4 and 5. At that point, the surveillance can be changed to an annual history and physical, imaging and blood work. Relapse of small cell lung cancer (SCL) can be treated with combination chemotherapy in much the same manner as the initial diagnosis. Any new pulmonary nodule identified after 2 years should be investigated as a potential new lung cancer.



Unfortunately, many patients do not live to see the time when they need only annual follow-up visits. Most patients are diagnosed at regional or distant stage, so 5-year relative survival rates are dismal, even for non-small cell lung cancers.

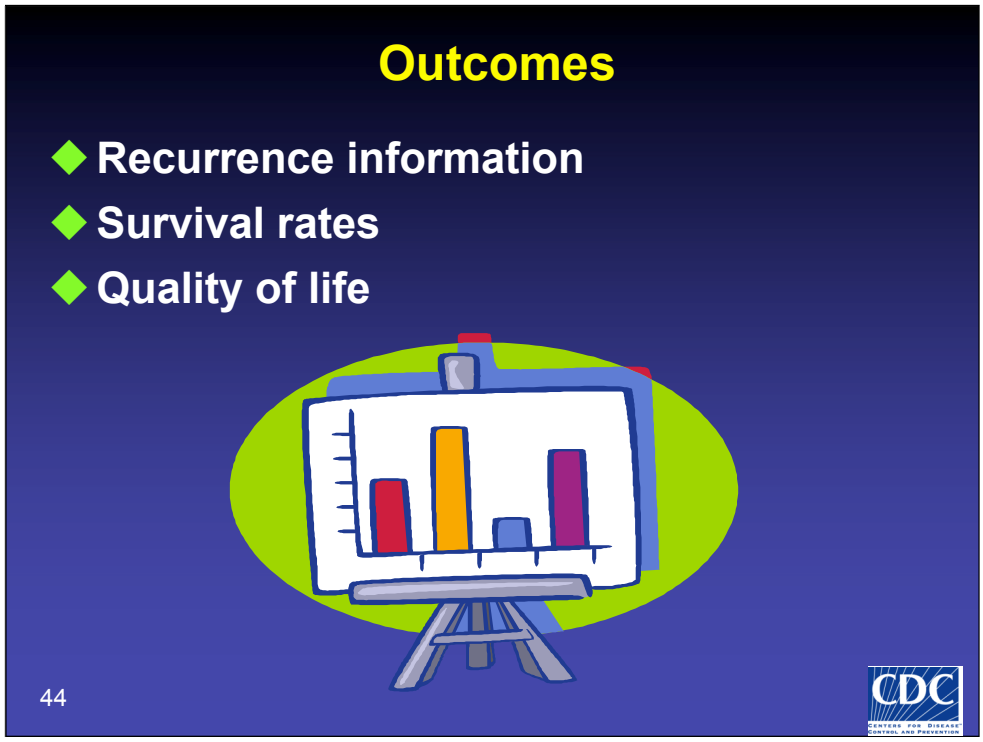
It is important to establish processes for gathering follow-up information at your facility. If you are linked to an electronic medical record, finding follow-up information is fairly straightforward. Some registrars prefer to send out letters to physicians and/or patients to obtain follow-up information. Regardless of who the initial contact is, appropriate data must be collected to achieve good follow-up. Complete and accurate follow-up will give you better survival rates, including disease-free survival. We can measure the success of treatment modalities based on our follow-up, if in fact we are recording accurate information.



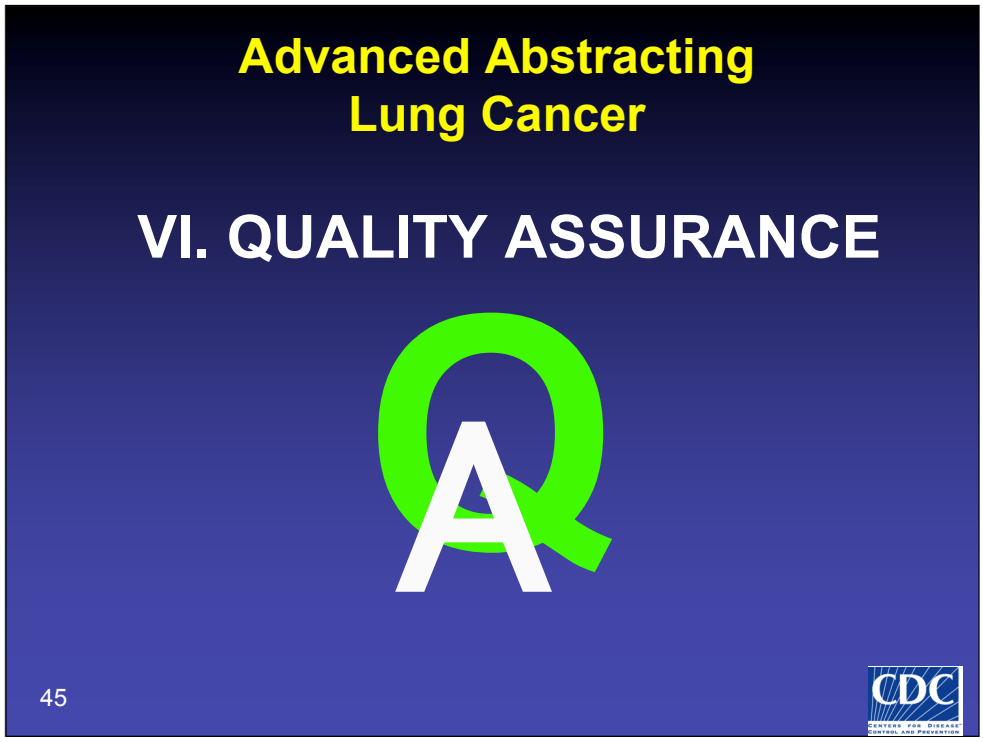
When recording follow-up information, you want to record the most recent date you obtained information on the patient's vital status and/or tumor status.

Record the patient's vital status at the time of contact and whether or not the patient was free of cancer or not. Many times patients come back into the facility for something unrelated to their cancer diagnosis. In this case, when tumor information is not known, the only field you can update is the patient status. If recurrence information is obtained, record the dates and type(s).

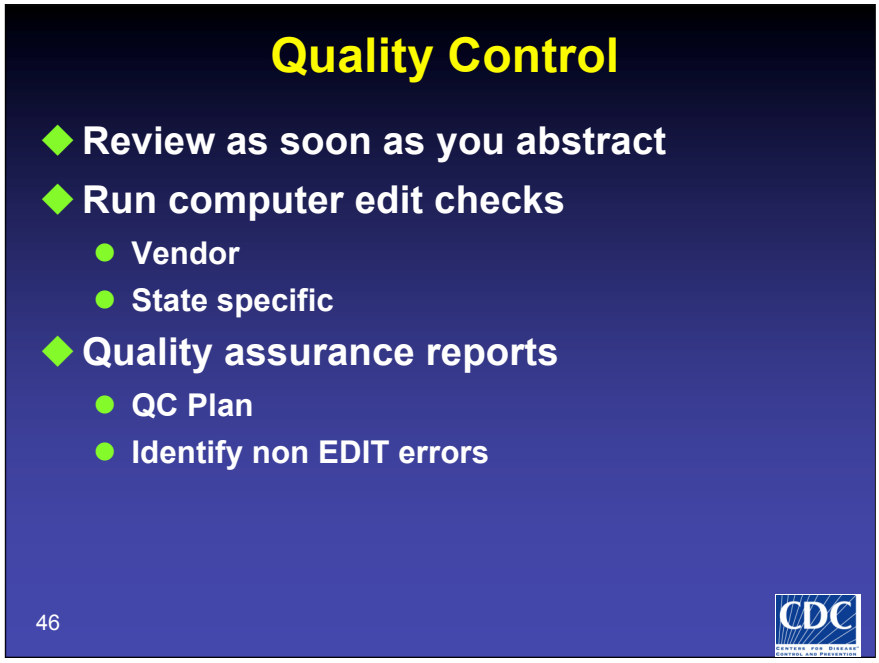
Be sure to record your contact source. This will assist you in obtaining future follow-up for that patient.



As mentioned in follow-up, ***recurrence information***, including cancer status is necessary to determine outcomes regarding the success of treatment modalities and survival rates. This is one of the principal functions of a hospital-based cancer registry. We can assess patients' disease-free survival, as well as their quality of life. When a patient is actively followed, information is recorded that will tell if the patient has had significant issues following their treatment. Many facilities record subsequent treatment and palliative treatment to enhance these assessments. The more follow-up data recorded within the abstract, the more useful the abstract becomes.



The final section of this advanced abstracting module discusses the ultimate activity for abstracting: quality assurance. QA is both making sure that data input into the registry is accurate and timely AND data and information extracted from the registry is accurate and relevant.



Quality control should begin as soon as you finish the abstract while the facts of the case are still fresh in your mind. Can you code the case using the text that you've entered in the abstract? Does the abstract make sense? Did you enter typos or did you enter what you meant to enter? If the case is accurate before you close it, you won't have to revisit it later.

Your abstracting software program should have the capability to run edits on each abstract. Some programs automatically run edits while others require a manual selection. Correct any errors identified before completing the abstract. In addition to the vendor edits, many central cancer registries provide reporters with a state specific edit set to run prior to their scheduled state data submissions.

Cancer registries are required to have a plan for data quality assurance. In addition to retroactive abstract review or reabstracting, the QA plan should include reports to scan for discrepancies; for example, tumor size versus stage of disease or node positive breast cancers without a chemotherapy treatment code. Part of the QA Plan should include a list of the reports that are run on a routine basis to monitor data quality.

When you tabulate data for a study, look for outliers, values out of range for the norm, for example, an early stage small cell lung cancer. Visual editing of the study data should lead to additional information to add to the routine QC reports. QC reports identify errors that might not be identified by an edit program.

Quality Assurance

- How do I make QA work for me?
  - Prepare appropriately
  - Useful analysis
  - Measure against performance standards

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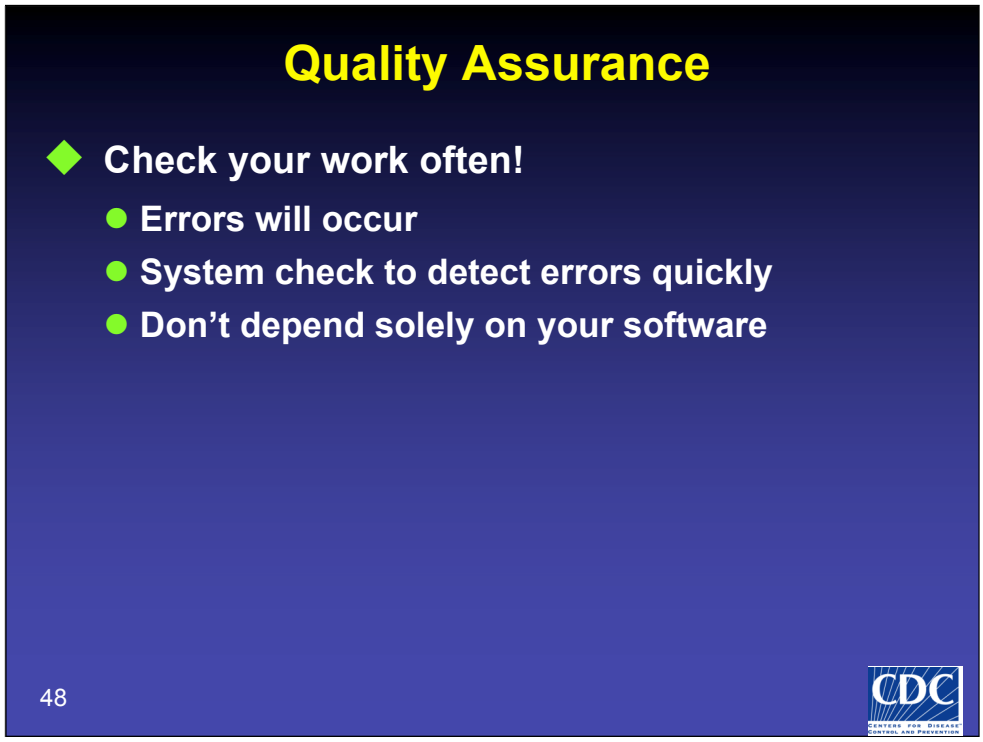
The quality assurance process should be useful to you as a registrar. A good start is to measure your data against national performance standards. Studies released by the NCDB, NPCR, and SEER, look at measures of quality and performance. The National Comprehensive Cancer Network has treatment and surveillance guidelines for both small cell and non-small cell lung cancers.



Check your work often. As previously noted, run software edit checks when completing an abstract. However, don't depend solely on your software to detect errors. The software edits will detect site/histology and other errors, but will not see that you did not provide text to support your codes. Develop a system check to detect errors quickly. Do a visual review of your abstracts. Print your abstract and check for errors. This will also help build your abstracting skills. If you have other colleagues in the department, swap abstracts periodically and perform reabstracting of each other's cases for quality review.

For information about CDC's
Cancer Prevention and Control Programs
and the
National Program of Cancer Registries

Please visit

www.cdc.gov/cancer/npcr